

# MANUFACTURERS' RECORD

A WEEKLY SOUTHERN INDUSTRIAL  
RAILROAD AND FINANCIAL NEWSPAPER.

## HELP WANTED

## SITUATIONS WANTED

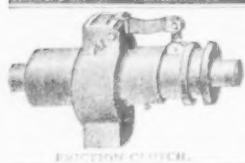
Advertisements under these two headings will be published free of charge in the MANUFACTURERS' RECORD. Such advertisements must not exceed four lines, or about twenty-five words, and four consecutive insertions will be given in our columns without charge. Replies addressed in our care will be forwarded to advertisers. The extended circulation of the MANUFACTURERS' RECORD and the care with which its pages are read make this opportunity one of exceptional value. We offer it freely to our patrons and friends, and ask them to make liberal use of it.

THE FULL TABLE OF CONTENTS WILL BE FOUND ON PAGE 40.

VOL. XXII.  
No. 2.

\$4.00 per year.  
Single Copy  
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Baltimore, August 12, 1892.



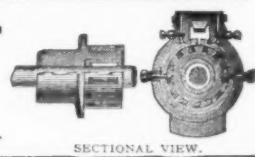
FRICTION CLUTCH.

## THE JAMES SMITH WOOLEN MACHINERY CO.

WOOLEN MACHINERY AND CARD CLOTHING OF EVERY DESCRIPTION.  
SHAFTING, HANGERS, PULLEYS AND FRICTION CLUTCHES.

Hub Friction Clutch Pulleys will run 1,000 Revolutions.  
411 to 421 Race Street,

PHILADELPHIA, PA.



SECTIONAL VIEW.

## SPECIAL NOTICE.

Two handsome photo-engraved display sheets entitled  
"RECENT IMPROVEMENTS IN AIR COMPRESSORS,"  
"RECENT IMPROVEMENTS IN ROCK DRILLS."

mailed free to any one who will cut out this advertisement and mail it to us with his name and address.

THE INGERSOLL-SERGEANT DRILL CO., No. 10 PARK PLACE, NEW YORK

## The BROWN HOISTING & CONVEYING MACHINE CO., CLEVELAND, OHIO, U. S. A.

MANUFACTURERS AND SOLE PROPRIETORS OF THE PATENTS, APPLICATIONS AND DESIGNS UNDER WHICH THE BROWN HOISTING AND CONVEYING APPARATUS AND VARIOUS TRAMWAYS FOR IT ARE BUILT.

NEW AND COMPLETE LABOR-SAVING SYSTEMS FOR HANDLING OF MATERIALS OF ALL KINDS. MACHINERY SPECIALLY ADAPTED FOR HANDLING PHOSPHATE.

### The Brown Patent

Cable Tramway System.  
Suspended Beam Tramway System.  
Bridge Tramway System.

Shed Tramway System.  
Warehouse Tramway System.  
Sewer Machine Tramway System.  
Continuous Elevated Tramway System.

THE FAYETTE-BROWN PATENT AUTOMATIC FURNACE HOIST.

## THE MARION STEAM SHOVEL CO.

MANUFACTURERS OF

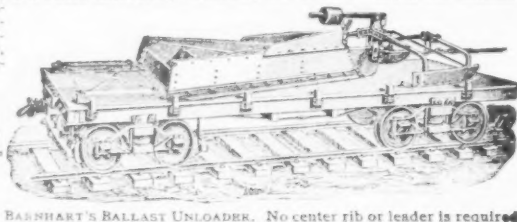


Barnhart's Steam Shovels, Dredges, Ditching Dredges, Railroad Ditchers, Wreckers, Ballast Unloaders, &c. Our Steam Shovels are largely used on Railroads and by Contractors, Brick Manufacturers, and in excavating Iron Ore, Handling Stock Ore, Stripping Coal Fields and Stone Quarries, and are a most desirable machine for any use where excavating machinery can be used. All of our machines guaranteed to give entire satisfaction; otherwise may be returned at our expense. For illustrated Catalogue, Photographs, and any further information desired, address

THE  
Marion Steam Shovel Co.

601 WEST CENTRE ST.

Marion, Ohio. BARNHART'S BALLAST UNLOADER. No center rib or leader is required.



## THE SOUTHERN SAW MFG. CO.

ATLANTA, GA.

Manufacturers of

### Highest Grade Saws

Also Dealers in Saw Mill specialties.

OUR INSERTED TOOTH SAWS have been thoroughly tested on all feeds and in all kinds of timber. Saw mill men concede it to be the strongest and easiest adjusted on the market. We guarantee price and quality.

Prompt Attention Given to All Kinds of Repair Work and Satisfaction Guaranteed.  
Write for Catalogue and Prices.



## The National Machinery Co.

Complete Outfits for Bolt and Nut Shops.

TIFFIN, OHIO.

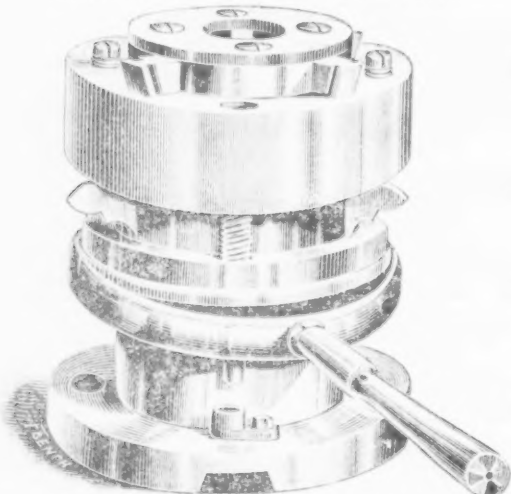
SPECIALISTS IN

### BOLT and NUT

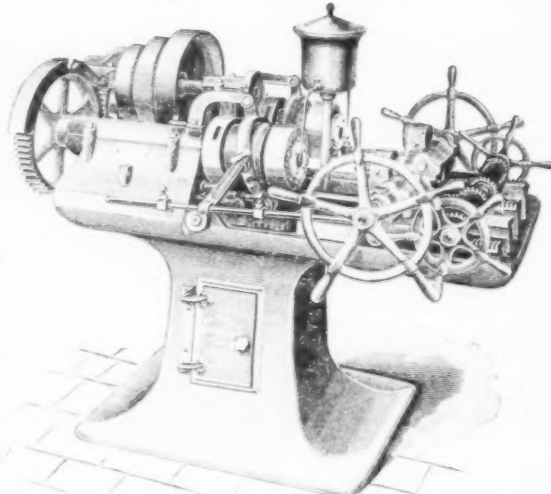
MACHINERY.

BOLT CUTTERS,  
BOLT POINTERS,  
NUT MACHINES,  
BOLT HEADERS,  
NUT TAPPERS,  
UPSETTERS & BENDERS,  
CAR LINK AND  
CAR PIN MACHINERY,  
WASHER MACHINES,  
ROCK AND ORE BREAKERS.

Catalogue and Prices on Application.



NATIONAL HEADS, Cutting 1/4 in. to 8 inches.



1 1/2 INCH DOUBLE BOLT CUTTER.

Clean Your Boiler Tubes with Abrams Expansion Flue Brush.

Write ST. LOUIS ST-EL WIRE BRUSH CO.  
ST. LOUIS, MO., for Circular.









## CLASSIFIED INDEX OF ADVERTISERS.

FOR "ALPHABETICAL INDEX" SEE PAGE 42.

**Acid Chambers.**

Charleston Lead Co., Charleston, S. C.

**Air Compressors.**Ingersoll-Sergeant Rock D. Co., New York, N. Y.  
Morris Machine & Iron Co., Dover, N. J.  
Rand Drill Co., New York, N. Y.**Anti-Friction Metal.**America Improved Anti-Friction Metal Co.,  
Mobile, Ala.  
Electron Metal Co., New York, N. Y.**Architects.**D. G. Zeigler, Charleston, S. C.  
Reuben Shirreffs, Richmond, Va.  
Chas. H. Read, Jr., Richmond, Va.  
John C. Knight, Boston, Mass.  
Wilson & Huggins, Roanoke, Va.  
Griswold & Nunan, Owensboro, Ky.  
Collins & Hackett, Staunton, Va.  
C. R. Makepeace & Co., Providence, R. I.  
Robert Miller, Spartanburg, S. C.  
Lockwood, Greene & Co., Boston, Mass.  
Drew, Baldwin & Co., New York, N. Y.**Architectural Iron Works.**Toledo Wire & Iron Works, Toledo, O.  
Toledo Cornice Works, Toledo, O.  
Cushman Iron Co., Roanoke, Va.  
Belmont Iron Works, Philadelphia, Pa.  
Champion Iron Co., Kenton, O.  
J. E. Bolles & Co., Detroit, Mich.  
Fred J. Meyers Mfg. Co., Covington, Ky.  
T. H. Brooks & Co., Cleveland, O.**Automatic Sprinklers.**Prov. Steam & Gas Pipe Co., Providence, R. I.  
Neracher & Hill Sprinkler Co., Warren, O.**Bankers and Brokers.**Godfrey & Train, New York, N. Y.  
Hopkins, Dwight & Co., New York, N. Y.  
Edward Morton & Co., New York, N. Y.  
Exchange Banking & Trust Co., Charleston, S. C.  
von Hemert & Co., Roanoke, Va.  
N. W. Harris & Co., New York, N. Y.  
Jno. L. Williams & Son, Richmond, Va.  
Middendorf, Oliver & Co., Baltimore, Md.**Barrel Machinery.** [See *Woodworking Machinery.*]

E. &amp; B. Holmes, Buffalo, N. Y.

**Bath Tubs.**

Haines, Jones &amp; Cadbury Co., Philadelphia, Pa.

**Bearings.**North American Metalline Co., Long Island  
City, N. Y.**Belting.**E. M. Freese & Co., Galion, O.  
W. W. Marmaduke, Washington, Ind.  
Cameron & Barkley Co., Charleston, S. C.  
Henry Popham & Son, East Newark, N. J.  
Main Belting Co., Philadelphia, Pa.  
Chesapeake Belting Co., Baltimore, Md.  
Gandy Belting Co., Baltimore, Md.  
Shultz Belting Co., St. Louis, Mo.**Beltino.** (Chain.)F. H. C. Mey, Buffalo, N. Y.  
Jeffery Manufacturing Co., Columbus, O.  
Link-Belt Engineering Co., Nicetown (Phila.), Pa.**Blacksmiths' Tools.**

Foss Manufacturing Co., Springfield, O.

**Blinds.**Adams & Woodson, Lynchburg, Va.  
Menroe Manufacturing Co., Lima, O.**Blowers and Exhaust Fans.**New England Ventilating & Heating Co.,  
Providence, R. I.  
Akron Heating & Ventilating Co., Barberton, O.  
West & Branch, Richmond, Va.  
Davidson Ventilating Fan Co., Boston, Mass.  
Geo. P. Clark, Windsor Locks, Conn.  
B. F. Sturtevant Co., Boston, Mass.**Boiler Fronts and Fittings.**

Vulcan Iron Works Co., Toledo, O.

**Boilers.** [See also *Machinery.*]W. C. Leffel Co., Springfield, O.  
John E. Beggs Machinery & Supply Co., New  
York, N. Y.  
Golley & Finley Iron Works, Lima, O.  
Ravenna Boiler Works, Ravenna, O.  
J. H. McEwen Mfg. Co., Ridgway, Pa.  
Carolina Machine Co., Fayetteville, N. C.  
New York Central Iron Wks. Co., Geneva, N. Y.  
Cameron & Barkley Co., Charleston, S. C.  
Holyoke Steam Boiler & Iron Works, Holy-  
oke, Mass.  
Geo. M. Clapp, New York.  
Cline Engine & Machine Co., Plymouth, O.  
Harrisburg Foundry & Machine Works, Har-  
risburg, Pa.  
American Well Works, Aurora, Ill.  
Bass Foundry & Mach. Works, Ft. Wayne, Ind.  
Geo. R. Lombard & Co., Augusta, Ga.  
Geo. J. Fritz, St. Louis, Mo.  
Chandler & Taylor Co., Indianapolis, Ind.  
Enterprise Boiler Co., Youngstown, O.  
Taylor Engine Co., Chambersburg, Pa.  
West & Branch, Richmond, Va.  
H. P. Edmund, Richmond, Va.  
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Richmond, Va.Struthers, Wells & Co., Warren, Pa.  
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H. Dudley Coleman Machinery Co., Limited,  
New Orleans, La.Greer Machinery Co., Knoxville, Tenn.  
N. Y. Safety Steam Power Co., New York, N. Y.  
Buckeye Engine Co., Salem, O.  
Stearns Manufacturing Co., Erie, Pa.  
Smith-Courtney Co., Richmond, Va.  
Skinner Engine Co., Erie, Pa.  
Talbot & Sons, Richmond, Va.  
Jas. Leffel & Co., Springfield, O.  
Cleveland & Hardwick, Erie, Pa.  
Dan Shea & Co., Memphis, Tenn.  
Oil Well Supply Co., New York, N. Y.  
Trudor Boiler Manufacturing Co., Cincinnati, O.  
Valk & Murdoch Iron Works, Charleston, S. C.  
Frick Co., Waynesboro, Pa.  
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Geo. W. Tift, Sons & Co., Buffalo, N. Y.  
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Hine & Robertson, New York, N. Y.  
Jas. Berryman, Philadelphia, Pa.  
Penberthy Injector Co., Detroit, Mich.  
Jenkins Bros., New York, N. Y.  
American Well Works, Aurora, Ill.  
Stillwell & Pierce Mfg. Co., Dayton, O.**Bolt and Nut Machinery.**

National Machinery Co., Tiffin, O.

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Pennsylvania Steel Co., Steelton, Pa.  
Hoopes & Townsend, Philadelphia, Pa.**Brick.**Washington Hydraulic Press Brick Co., Wash-  
ington, D. C.  
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Samuel Kaye, Columbus, Miss.  
Theo. Plummer, Nashville, Tenn.  
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S. B. Mosby & Co., Bedford City, Va.  
Cotton Compress Co., care MANUFACTURERS'  
RECORD.

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Box 486, Atlanta, Ga.

"Electric," care of MANUFACTURERS' RECORD.

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T. H. Sampson, New Orleans, La.

L. H. Spilman, Receiver, Knoxville, Tenn.

P. Duvinage &amp; Co., Brooklyn, N. Y.

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M. V. Richards, Baltimore, Md.

"A. B. C.," care of MANUFACTURERS' RECORD.

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George Place Machinery Co., New York, N. Y.

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Louis, Ill.Haight & Clark, Albany, N. Y.  
A. Whitney & Sons, Philadelphia, Pa.  
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Vulcan Iron Works Co., Toledo, O.**Castings.** (Steel.)

Chester Steel Castings Co., Philadelphia, Pa.

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phia, Pa.

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Herman Poole, New York, N. Y.

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The Moore &amp; White Co., Philadelphia, Pa.

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Gates Bros. &amp; Sharp, Corinth, W. Va.

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Vulcan Iron Works Co., Toledo, O.  
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Julian Kennedy, Pittsburg, Pa.  
W. H. Gibbs, Jr., & Co., Columbia, S. C.  
N. Y. Safety Steam Power Co., New York, N. Y.**Conveyor.**Brown Holsting & Conveying Machine Co.,  
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Cambridge Roofing Co., Cambridge, O.

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Acme Roofing Co., Canton, O.

J. H. Eiler &amp; Co., Canton, O.

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Holton Iron Roofing Co., New Lisbon, O.

Kanneberg Roofing Co., Canton, O.

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National Cotton Gin Co., Boston, Mass.

Carver Cotton Gin Co., East Bridgewater, Mass.

Dudley E. Jones Co., Little Rock, Ark.

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Raymond Bros. Impact Pulverizer Co., Chi-  
cago, Ill.  
Union Foundry & Mach. Wks., Rockaway, N. J.  
Thompson & Campbell, Philadelphia, Pa.  
J. R. Alsing Co., New York, N. Y.  
National Machinery Co., Tiffin, O.  
P. M. Walton, Philadelphia, Pa.  
Munson Bros., Utica, N. Y.  
Sprout, Waldron & Co., Muncy, Pa.  
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Gates Iron Works, Chicago, Ill.  
American Ore Machinery Co., New York, N. Y.  
Frisbee-Lucop Mill Co., New York, N. Y.  
Stedman's Fdry. & Mach. Works, Aurora, Ind.  
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Urie Dredge Mfg. Co., Kansas City, Mo.  
Marion Steam Shovel Co., Marion, O.  
Copeland & Bacon, Philadelphia, Pa.  
Bucyrus S. Shovel & Dredge Co., Bucyrus, O.**Drills.** (Prospecting.)Sullivan Machinery Co., successor to Diamond  
Prospecting Co., Chicago, Ill.

M. C. Bullock Manufacturing Co., Chicago, Ill.

**Drills.** (Rock.)Sullivan Machinery Co., successor to Diamond  
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Ingersoll-Sergeant Rock D. Co., New York, N. Y.

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Mich.

New Process Twist Drill Co., Taunton, Mass.

Cincinnati Tool Works, Cincinnati, O.

Syracuse Twist Drill Co., Syracuse, N. Y.

Silver Manufacturing Co., Salem, O.

W. F. &amp; Jao. Barnes Co., Rockford, Ill.

Cleveland Twist Drill Co., Cleveland, O.

Lodge &amp; Davis Machine Tool Co., Cincinnati, O.

Foss Manufacturing Co., Springfield, O.

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**Ejectors.**

Sherwood Manufacturing Co., Buffalo, N. Y.

**Electric Lighting.**John E. Beggs Machinery & Supply Co., New  
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Heisler Electric Co., Philadelphia, Pa.

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G. T. Woods Mfg. Co., New York, N. Y.

John E. Beggs Machinery & Supply Co., New  
York, N. Y.

Hall Engineering Co., St. Louis, Mo.

Jordan &amp; MacLeod, Washington, D. C.

H. Ward Leonard &amp; Co., New York, N. Y.

Rockford Electric Mfg. Co., Rockford, Ill.

S. W. Frescoln, New York, N. Y.

Edison General Electric Co., New York, N. Y.

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Jordan &amp; MacLeod, Washington, D. C.

John Simmons Co., New York, N. Y.



## VULCAN IRON WORKS CO.

Our "GIANT" EXCAVATOR,  
Weight, 40 tons; Capacity,  
2000 cubic yards per day.

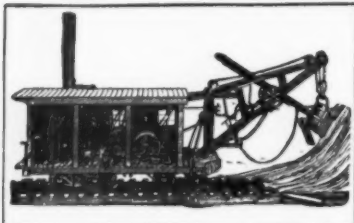
Toledo, Ohio, U. S. A.

MANUFACTURERS OF  
DREDGES AND EXCAVATORS,  
BOILER FRONTS  
AND  
RAILROAD CASTINGS.

The "LITTLE GIANT"  
Excavator,

Weight, 20 tons; capacity, 1500  
cubic yards per day. Especially  
well adapted for all contract  
work.

## DREDGES & SHOVELS



### STEAM DREDGES,

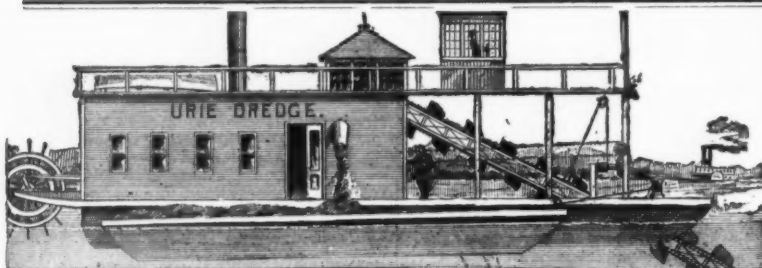
For Drainage and Irrigation,  
Filling Land, Levee Work,  
Harbor Work, Etc.

### STEAM SHOVELS,

For Railroads, Contract Work,  
Stripping Coal and Ore,  
Brickyards, Highways, Etc.

## Bucyrus Steam Shovel & Dredge Co.

BUCYRUS, OHIO.

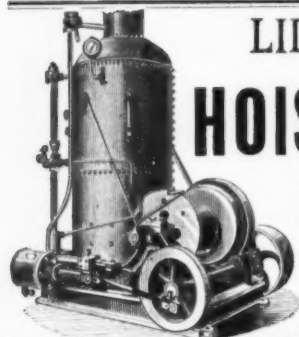


Dredges

For Phosphate,  
Gravel, Canals,  
Levees,  
Harbors.

URIE DREDGE MFG. CO.

Station "A," Kansas City, Mo.



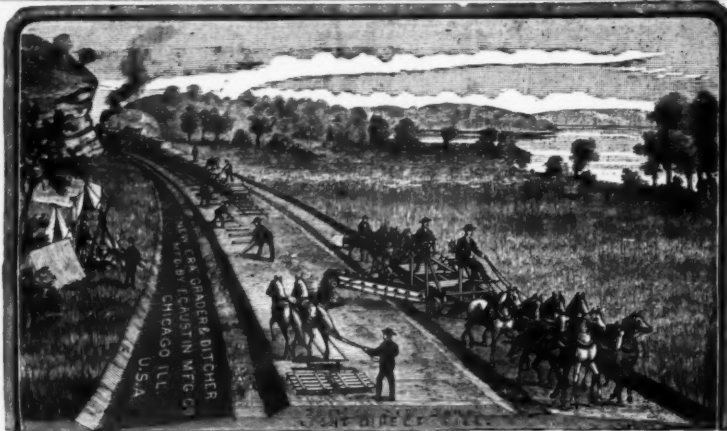
## LIDGERWOOD MFG. CO.

MANUFACTURERS OF IMPROVED

## HOISTING ENGINES

Specially adapted for Railroad and Contractors' uses,  
Pile Driving, Bridge and Dock Building, Excavating, etc.  
300 Styles and Sizes and over 8,500 in use.

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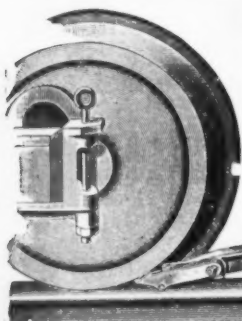
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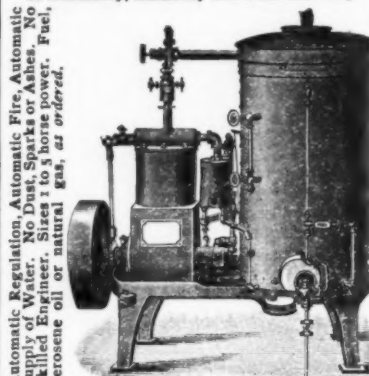
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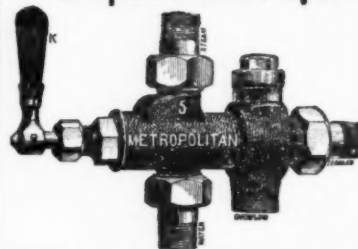
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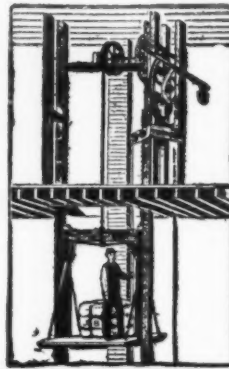
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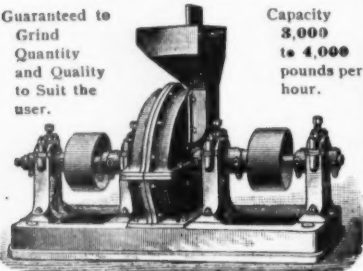
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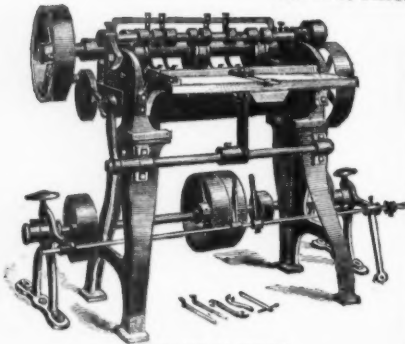
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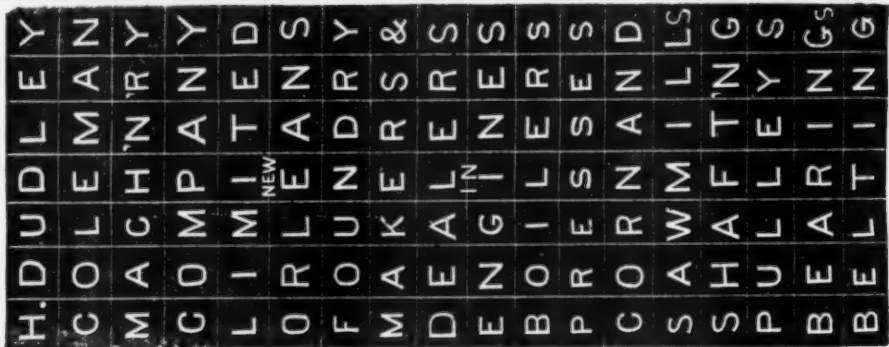
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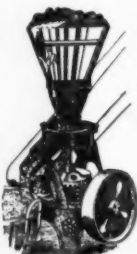
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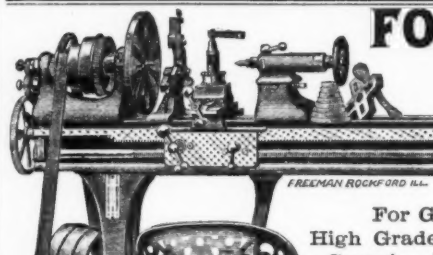
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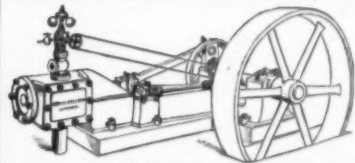
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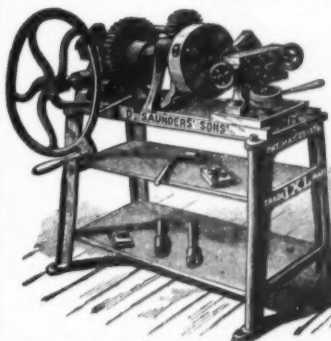
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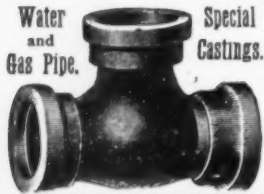


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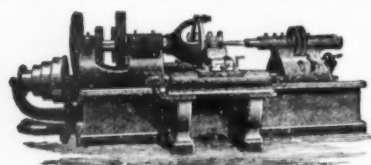
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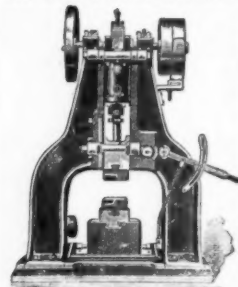
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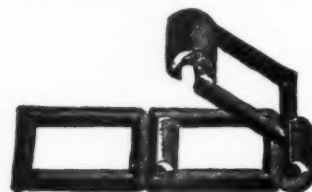
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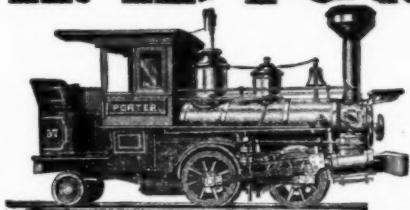


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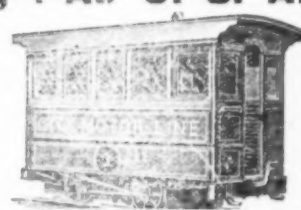
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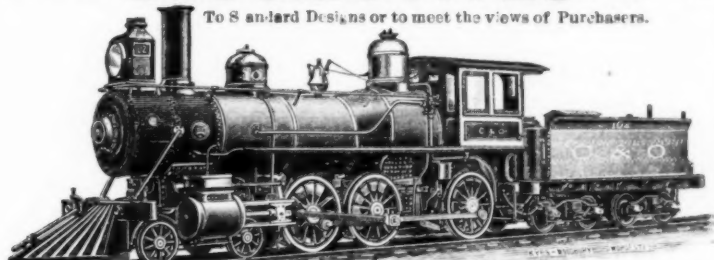
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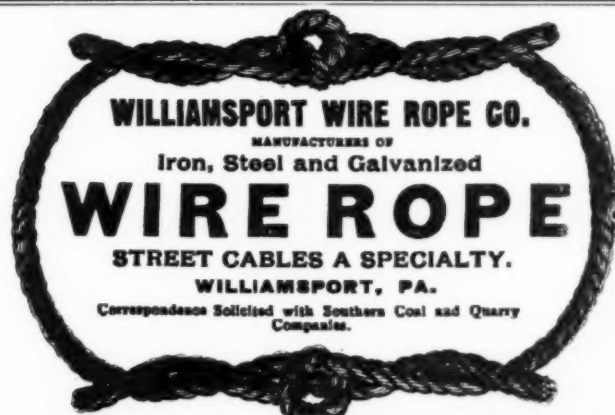
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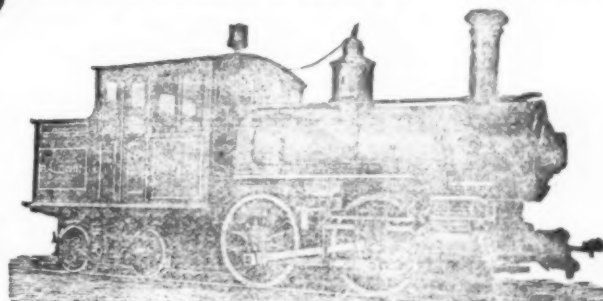
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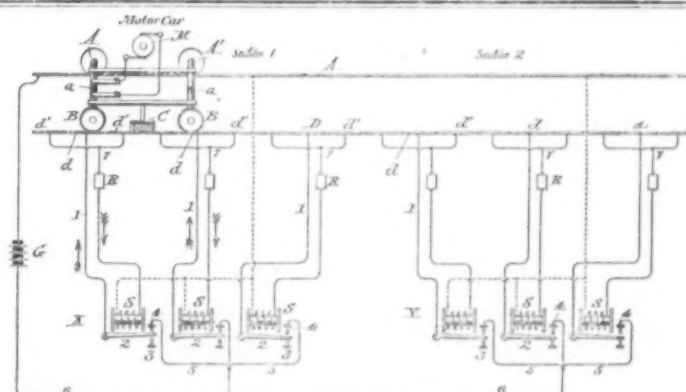
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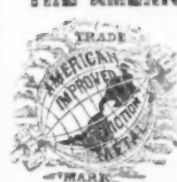
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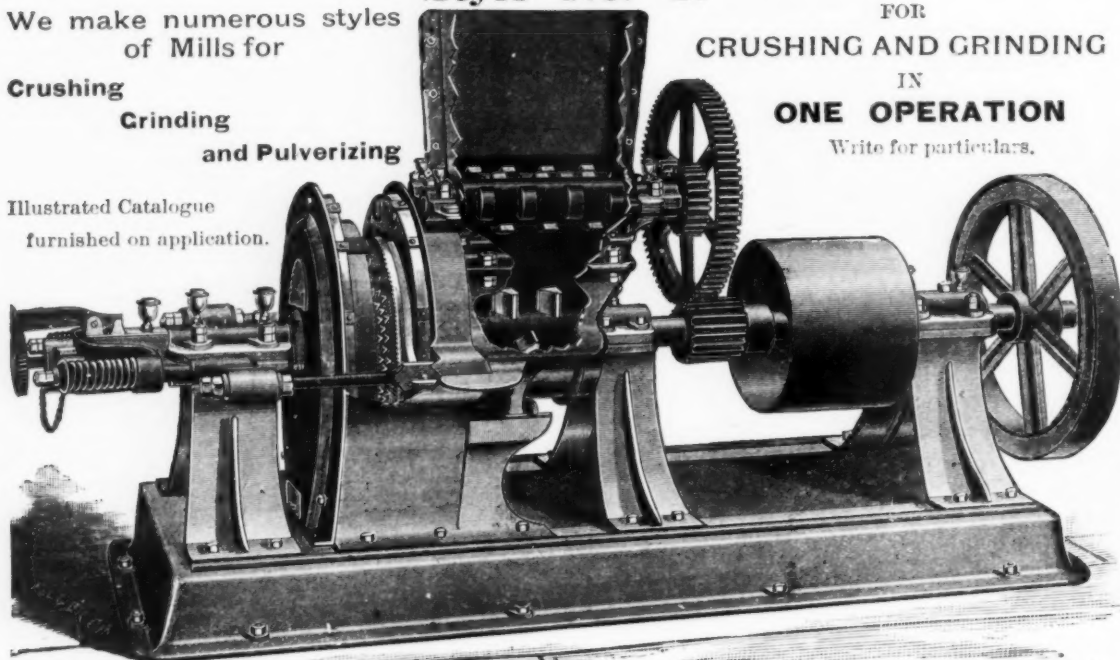
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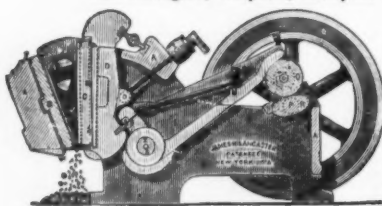
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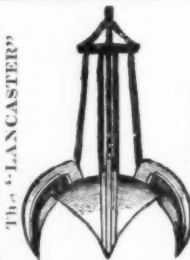
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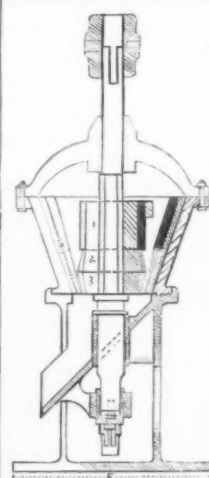
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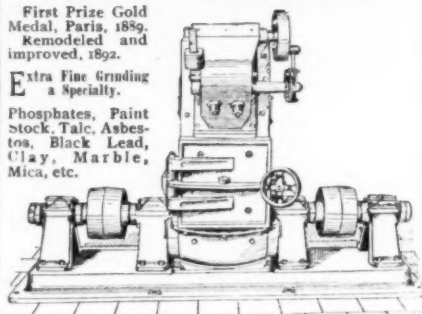
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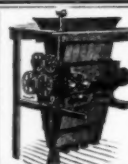
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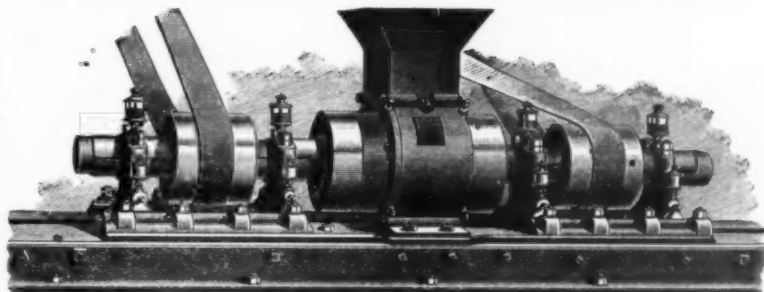
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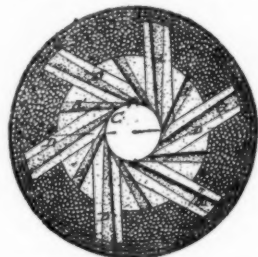


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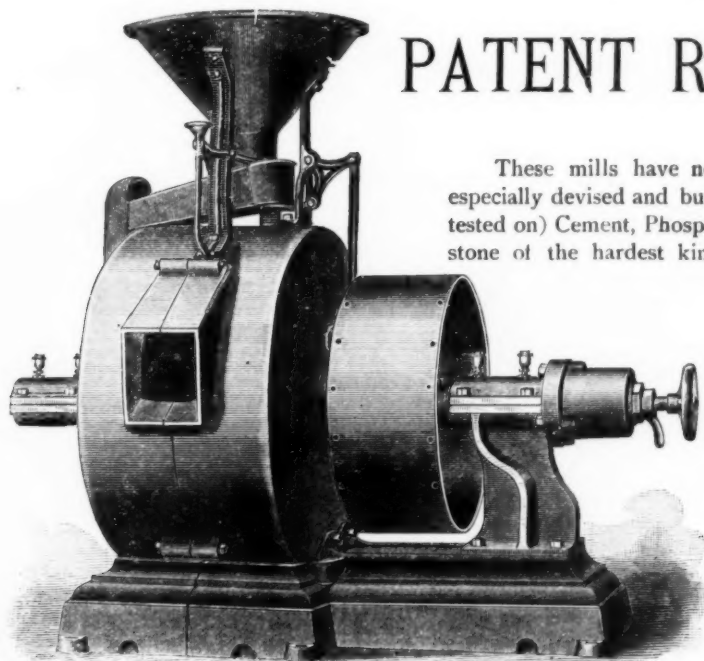
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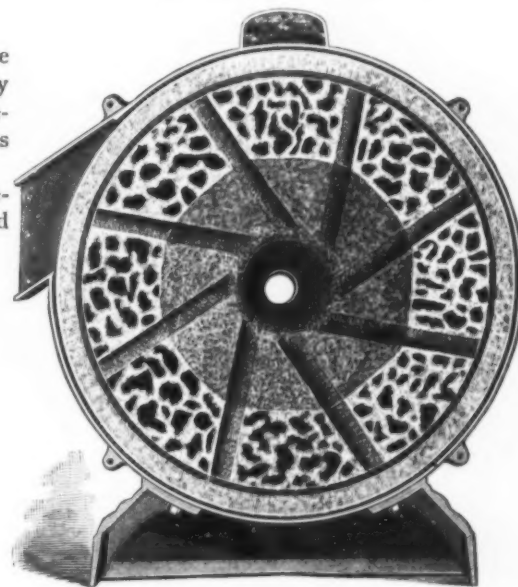
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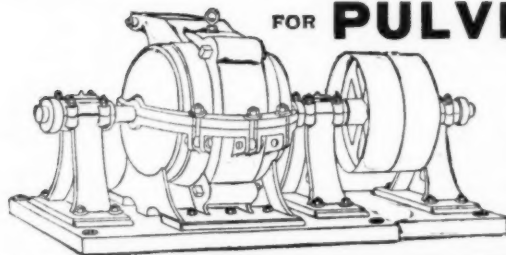


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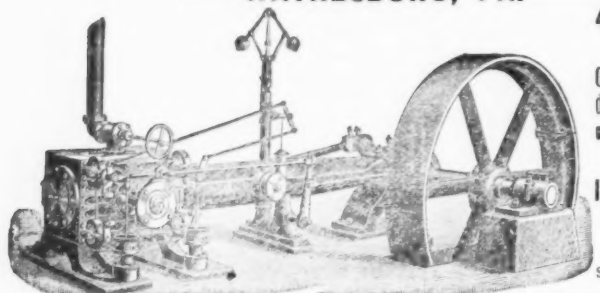
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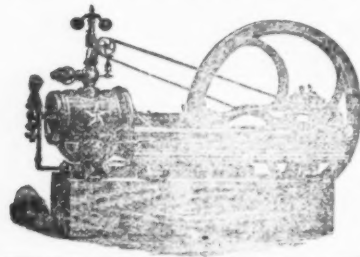
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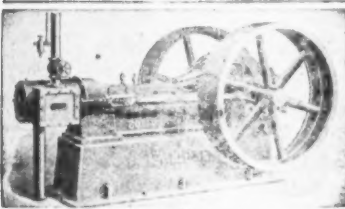
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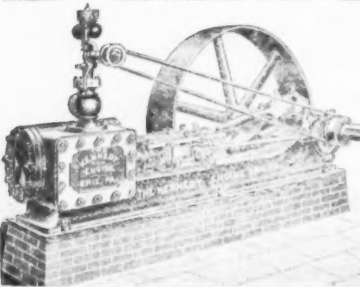
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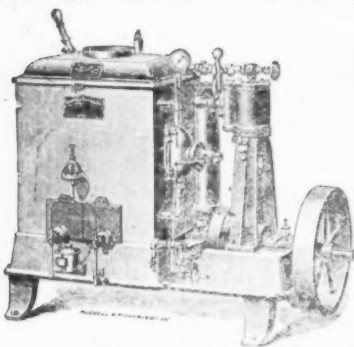
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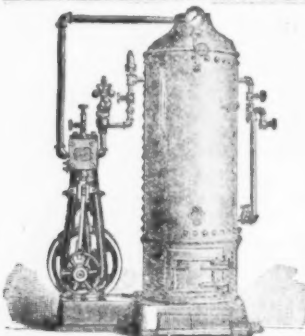
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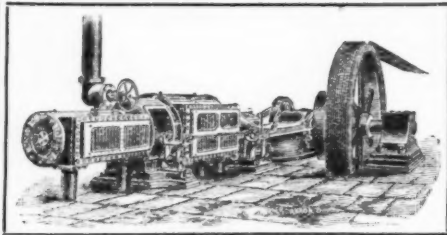
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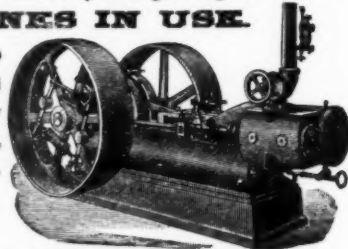
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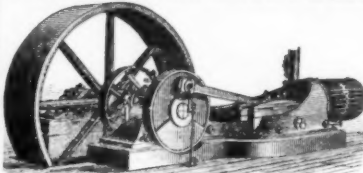
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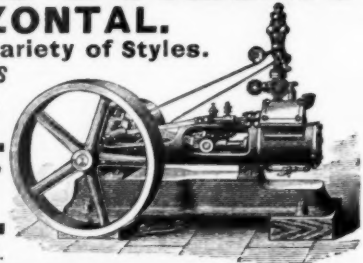
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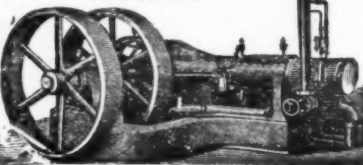
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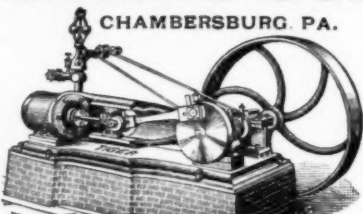


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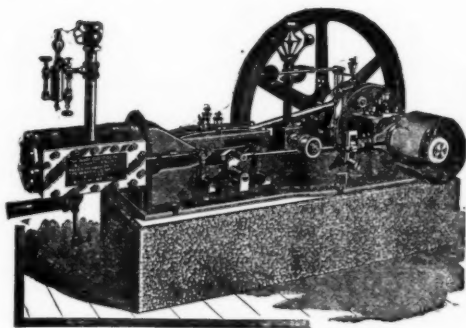
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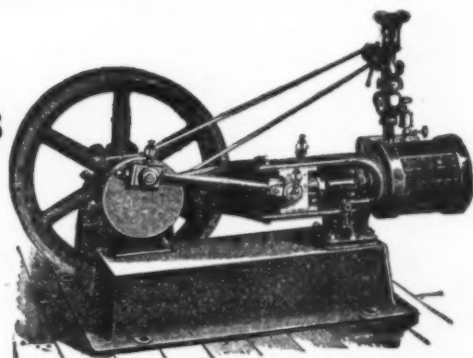


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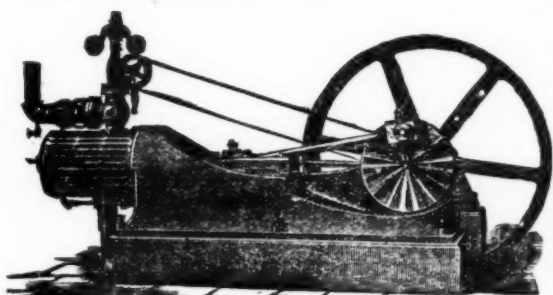
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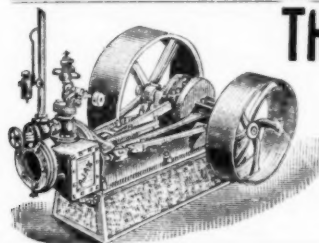
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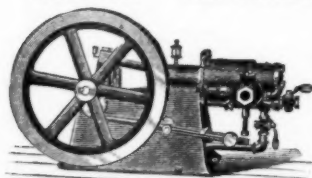
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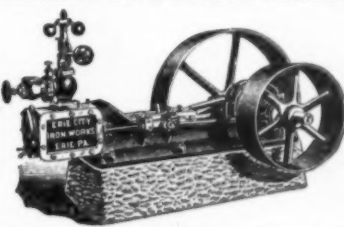
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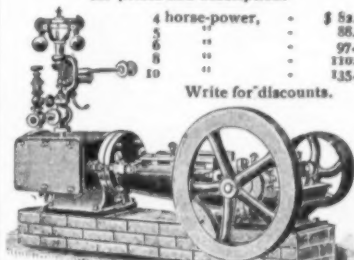
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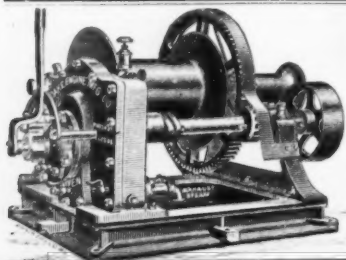
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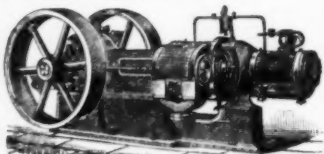
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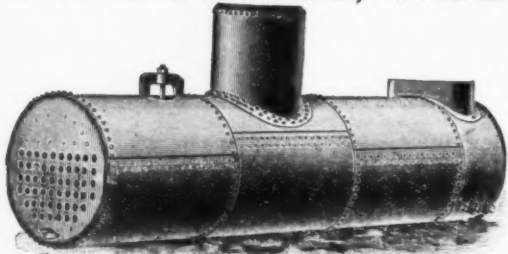
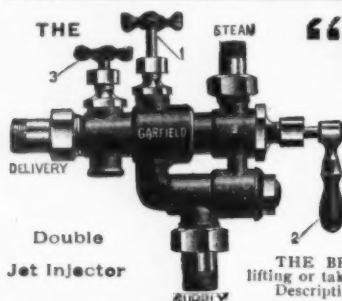
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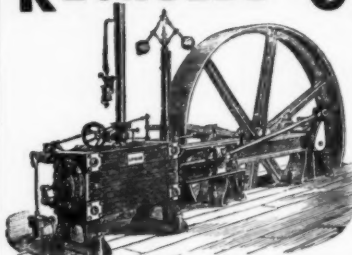
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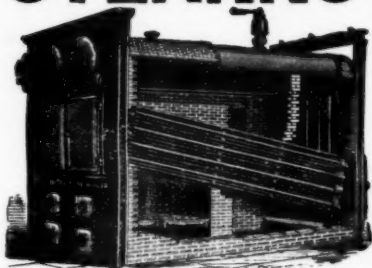
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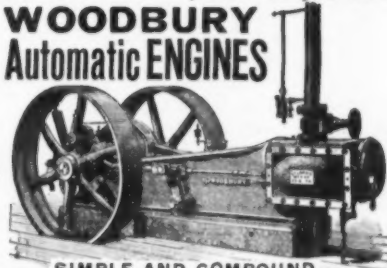
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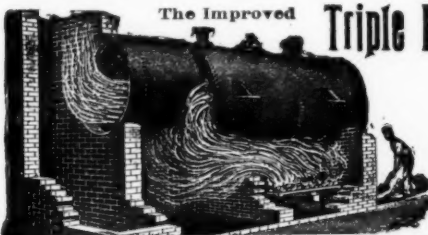
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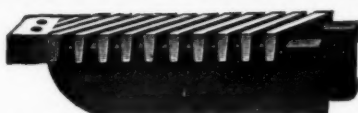
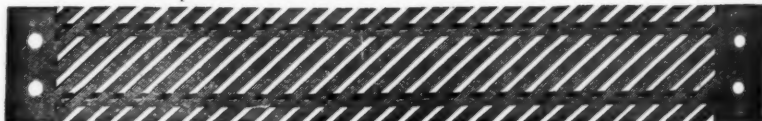
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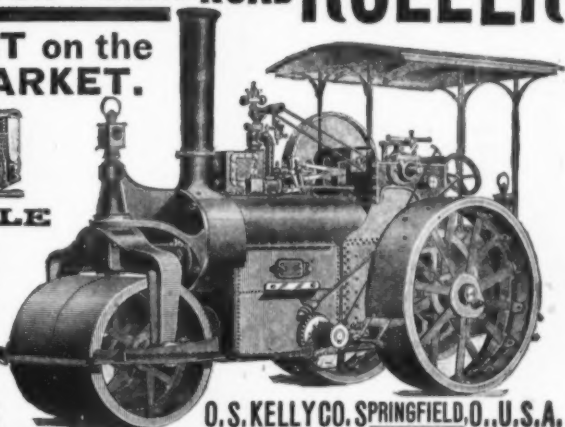
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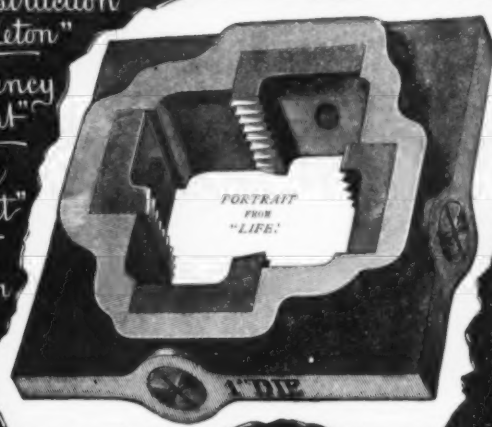


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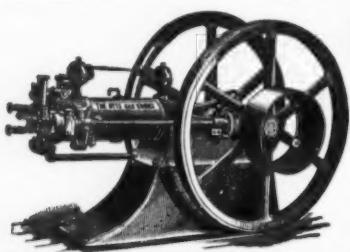
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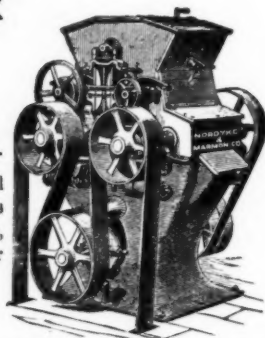
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VOL. XXII. No. 2.  
WEEKLY.

BALTIMORE, AUGUST 12, 1892.

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## The Intercoastal Waterway.

By Lewis M. Haupt, Consulting and Maritime Engineer.

### IV.

The last serial described in outline the Atlantic watercourses as far as Florida. It remains to indicate the general line across the peninsula and through the littoral bays, sounds and lagoons stretching even to the Rio Grande. So many and intricate are the various watercourses of this region that to select the best route from the present data becomes almost impracticable and will not be attempted, as it is the purpose of this paper merely to present the possibilities for improvement, as well as the existing physical conditions.

To connect the commerce of the lower Mississippi river with that of the Southern Atlantic coast there are several alternatives. It may be accomplished by a canal between the river above New Orleans and Lakes Ponchartrain and Borgne to Mississippi sound and Mobile bay; thence by a cut of ten miles into Perdido bay; another cut of four miles to the Bay of Pensacola; thence via Santa Rosa sound to the bay of the same name. Another canal of fourteen miles opens up St. Andrew's bay, and a 19 mile cut connects these waters with those of Lake Wimico, which is connected by a bayou with the Apalachicola, and down the latter to St. George's sound. This route along the Gulf coast would therefore require about fifty-seven miles of canals to be cut through the low sandy and marshy shores of this region. The total cube to be removed for a 9 foot barge navigation is roughly computed to be 8,395,285 yards, which at an average cost of fifteen cents would amount to \$1,259,292. The section used in this estimate was sixty feet wide at bottom and eighty feet at top.

From St. George's sound to the St. Mary's river there are five routes possible. The following description of one of these is taken chiefly from the reports of Major Robert Gamble, of Tallahassee, and of Gen. Q. A. Gillmore. The line preferred by Major Gamble passes eastward through Crooked river to Ocklocknee river, and thence to the "Waculla spring," which spouts up from the crown of a ridge thirty feet above tide as a full fledged river of remarkably constant flow, furnishing an ample supply for a large commerce. The total distance to be supplied would extend 110 miles from St. James island to the Suwanee river. The line could follow up this river to its junction with the Little Withlacoochee rising to sixty feet above tide with the aid of a few locks, a distance of between twenty and thirty miles. From this point it could pass northeasterly through the Okefenokee swamp and plateau to the St. Mary's river at Camp Pinckney.

The total length by this route, from the Mississippi to its terminus on the St. Mary's, is estimated at from 520 to 550 miles, according to whether it starts from above or below New Orleans.

Of this distance 212 miles is excavation and dredging, and is estimated to cost \$5,349,972 for an 8-foot barge canal. The summit level will be about seventy-four miles long, to be fed by the waters of the Okefenokee swamp and Suwanee river.

## THE SHIP CANAL.

In 1879 surveys were made for a ship canal across Florida, from the St. Mary's river to the Gulf, by Mr. S. L. Fremont, under direction of General Gillmore.

The waterway of this project was designed to be eighty feet wide at bottom, twenty-five feet deep, with side slopes of one on two carried to five feet above the surface. Above this the slopes are as steep as the material will admit. At the surface the width is to be 180, and passing places are provided for 1,000 feet above and below each lock to 155 feet at bottom and 255 at top. Similar bays 1,600 feet long are also provided at intervals of six miles.

The locks are designed to be 500 feet in length, sixty-five feet wide at the gates, with twenty-five feet draft over the sill. They are arranged in pairs side by side and with lifts of ten to fifteen feet. This canal would be 122 miles long, or from the entrance on Cumberland sound to the Gulf, 168.5 miles. The ascent from the St. Mary's requires seven lift locks of fifteen feet each, attaining the summit level at 108 above tide. This level begins five and one-half miles from Camp Pinckney, and at eleven and one-half miles from the same point enters the Okefenokee swamp, through which it stretches for twenty-two miles. In fourteen miles more it intersects the Suwanee river about three miles below Blount's Ferry. Crossing this stream the summit level continues eighteen miles further, making the total reach of sixty-two miles. From here it descends by two locks of ten feet lift each, crosses the Alapaha, and, turning southward, crosses the Withlacoochee river near Ellaville, and then through the centre of San Pedro bay; thence, descending from it by six locks of eighty-five feet total lift, it enters the Gulf at mean low water.

The total estimate for these 122 miles was \$50,278,746, or \$412,121 per mile, of which the principal items were for excavation and embankment of the canal prism \$24,571,468; locks and gates, in round numbers, \$7,000,000; harbor on the Gulf, \$5,000,000; entrance to St. Mary's river, \$2,000,000.\*

The cost of maintenance and operation was estimated by Mr. Fremont at \$502,000, who makes this pertinent comment in closing his report: "I am always in favor of the shortest lines for public transportation if they are practicable, as the difference in cost of construction is not to be considered in comparison with the perpetual cost of operating and repairs."

## COMMERCIAL IMPORTANCE.

The principal objects of this canal are to save the distance and reduce the risks through the straits. The existing distance from New Orleans may be lessened from 1,790 to 1,293 miles, a saving of 497 miles, while that to Liverpool may be reduced from 4,610 to 4,198, or 412 miles, by the 169 mile channel. The saving of time to steamers having a speed of eleven knots is estimated at twelve hours, and for sailing vessels it would be much more, while the economy in running expenses between New York and New Orleans is only \$266.50, or 14 per cent. of the cost of the trip, but

\*Acknowledgment is made for assistance of Mr. J. L. Suess and William R. Hutton in preparing the report.

it was expected that the reduction of freight tariffs on ocean freight would amount to at least 20 per cent. after paying the canal tolls. The average value of the vessels lost on the reefs between 1874-79 was \$178,800 per annum. The total value was \$894,000, while the number of casualties was sixty-six.

To earn the current expenses for administration and maintenance would require 1,758,000 tons annually at twenty-eight cents per ton, while the total commerce of the Florida straits for 1879 was 2,600,000, so that if all passed through the canal it will leave but a small net return.

"From a national point of view this canal is a part of a comprehensive scheme for improving and cheapening our means of water transportation from the heart of our grain and cotton growing regions to foreign ports, and there would seem to be as little need of attempting to fix its rentable or money-earning value as in undertaking to apply the same rule to the works of river and harbor improvements," and yet it has been shown by statistics that although the total amount of \$30,000,000 has been expended on the Great Lakes, the saving in transportation in one year has exceeded three times this amount, thus demonstrating conclusively the great economy of works of this class and their general benefit.

The Suez Canal, opened in November 1869, cost about \$60,000,000. In 1871 the number of vessels passing through was 765, having an aggregate tonnage of 1,142,200 tons, producing \$1,798,700 revenue. In 1874 these figures were 1,264 vessels, 2,423,670 tons and \$4,900,000, and last year the tonnage had expanded to nearly 9,000,000. There can be no question that the traffic through the Florida Ship Canal would, in a short time, be sufficient to pay a handsome dividend upon its cost. It would require about 10,000,000 tons per annum to pay all expenses and a 5 per cent. dividend, and with the improvement in depth recently obtained in the Gulf ports and the increase in population and railroad facilities, it may be affirmed that the time is now mature for the commencement of this great economic measure.

## Prosperity of the South.

Baltimore is more closely in touch and sympathy with the South than any other city in the country. Consequently the following comments on Southern conditions by Hambleton & Co., of Baltimore, in their circular letter of August 6, carry weight and authority:

"The collapse in speculative ventures, especially land and building booms, and the production of successive enormous crops of cotton, together with very low prices for this great Southern staple, have created a sentiment unfriendly to Southern interests and somewhat unfavorable to the progress of this section. That this sentiment is unjust, and not substantiated by facts, is shown in the statistics of Southern trade, the results of Southern industries and in the absence of any evidence of excessive commercial and financial disasters.

"The conversion of corn fields into corner lots, and the inflated values put upon real estate, in connection with great industrial progress and prosperity, are sure to be

overdone and to meet with their natural sequence—reaction and liquidation—no matter in what section the scene of operations may be. The depression in such speculative ventures and decline in values were not confined to the South, but were more noticeable there than elsewhere, because such operations were a new experience among a people largely devoted to agriculture and who were accustomed to make their living by the sweat of the brow rather than through speculative ventures. After all it is questionable whether the collapse of such speculative booms seriously injured the people of the South. Indeed, it would appear that the money to purchase corner lots in corn and cotton fields came chiefly from other sections, and in this the South had the best of the bargain.

"However, the money made or lost in such speculations is merely incidental to the improvement or depression in legitimate values, and although prices have declined and industrial interests have been retarded, there is abundant evidence that the legitimate industrial, commercial and financial enterprises of the South are based upon sound principles and foundations, and that when the rebound comes it will be in this section that the most rapid recovery and greatest progress will be made.

"It was the unbounded resources of the South which attracted the capital of the whole country and millions of foreign money. And it was in the legitimate development of these resources that fortunes were made and are yet to be secured. The developments in the South, as great as they have been, are, comparatively speaking, yet in their infancy, and we anticipate that for years to come the South will be the favored section for the employment of capital and the exercise of industrial enterprises.

"We claim that the South has stood the depression of the past two years quite as well, if not better, than other sections of our country; that its affairs are now in much better shape than is generally conceded, and that its future possibilities of advancement are incomparably better than elsewhere.

"Much stress has been laid upon the great cotton crop and the low prices obtained, but proper appreciation does not appear to be had of the fact that the increased production somewhat offsets the decline in values.

"It also appears not to have been considered that cheap cotton has largely stimulated home manufacturing, and that the low prices of the products of iron furnaces have been withstood without disastrous results.

"The manufacture of raw material, where produced, is a factor so favorable to the South as to defy competition. This advantage is now possessed by the South, and will be maintained to the great advancement and prosperity of Southern industries, business and trade. \* \* \* \*

"Baltimore is the chief and best market for Southern securities, and many millions of Southern railroad, city and industrial bonds are held by our institutions and investors.

"It is a significant and most conclusive evidence of the soundness and safety of Southern investments that there have been so few defaults in interest payment of the

bonds of Southern corporations. It is true that the Richmond & Danville, the East Tennessee, Virginia & Georgia and the Central Railroad of Georgia have recently been placed in the hands of receivers, but it was not because of the insolvency of these corporations, which are believed to be fully capable of meeting all obligations, but because of the financial difficulties of the Terminal company, now struggling in the throes of bankruptcy.

"The Richmond & Danville Co. is paying the interest on all of the divisional and endorsed bonds and of the millions of Southern bonds traded in at our exchange; there have been no defaults except on the Richmond & Danville bonds, coupons of which are being purchased by parties at New York, and on Macon & Northern 4½s, which bonds are endorsed jointly by the Richmond & Danville and the Central Railroad of Georgia.

"This we consider most remarkable, and a thorough vindication of the solvency of Southern industries and enterprises."

#### Peruvian Cotton.

The long staple Peruvian cotton which has met so much favor in this country as well as in England and Germany for mixing with wool is grown only in two districts in Peru. These are the Piura and Chiravalles, the upper parts of which are subject to periodical overflows, while the lower parts, having lower banks, are overflowed at each little rise of the rivers passing through them. Consequently the lower valleys are exceedingly fertile throughout their entire width, while the upper ones have only a belt of fertile ground next the rivers.

While there is an abundance of water for irrigation, no practical measures have thus far been adopted, and some lands whose fertility is proverbial in Peru are allowed to lie waste, the only agriculture carried on being along the river banks and on such sections further retired as are flooded by the inundations and heavy rains which occur with almost mathematical precision once in every seven years.

These rains show so palpably what a small amount of water will do for the wonderfully fertile soil that it has been the constant desire of the government to establish a system of irrigation which will bring under organized cultivation lands which are now of little use or value. At seven different times surveys and reports were made upon this work, and the government at last decided to carry it on. Just at that period, however, the Chilean war took place and the matter dropped. Since then private parties have taken hold of the plan and are now preparing to carry it through.

The exports of Peruvian cotton to Liverpool decreased somewhat in 1890-91, owing to an increase in direct shipment to the United States. The total receipts at New York for the season 1890-91 were 1,957,020 pounds, of which 1,615,830 pounds came through Liverpool and 341,181 pounds came direct.

It is not likely that this cotton will ever conflict with that grown in the United States, as it is used almost exclusively by the manufacturers of woolen goods. Mixing it with wool can hardly be called an adulteration, as in most cases it enhances the value of the goods, reducing the tendency to shrink, improving the finish and lustre, as well as making them more durable. This cotton might well be termed vegetable wool, as, when carded, its resemblance to natural wool is so close that it might almost be sold as such, and when woven into woolen goods the cotton fibres cannot be determined except by special tests.

Consul Dougherty, of Callao, who gives these facts in his consular report for June, further says that the peculiarity of Piura cotton is doubtless the result of soil and

climate. The climate is excessively dry and the heat is continuous. From observations taken during three years the average range of the thermometer was from 70° to 77° and the highest noted being 85° at three o'clock in the afternoon. The atmospheric humidity noted during the same period was between 60° and 65°. During the afternoons a strong breeze always comes up.

While it might be possible to find in the United States a section which may in a measure meet these requirements of climate, it would be difficult to find it joined to the equally necessary conditions of the soil. The necessity for a uniform and high heat during ten months for the development of the plant is a barrier to its cultivation in any but a tropical country. The department of Piura will undoubtedly be for a long time the only source of supply, and if the demand for this peculiar cotton shall increase as is to be expected, the increase of cultivable land through a well-organized system of irrigation will not only cover all possible demand, but will tend to lower its price and thus make its use more general.

The general conditions in parts of the cotton belt of Texas approach nearly to those described by Consul Dougherty, and in Lower California they are almost identical. The character of the Peruvian soil is not described, so it is not possible to compare it with soils in this country, but it would be well for Texas cotton growers to endeavor to secure some of the seed of this Peruvian cotton and try the experiment of raising it.

#### Georgia Peaches.

Major W. A. Boyle, freight agent of the Charleston & Savannah Railroad, recently made an extended trip through Southwest Georgia, and in an interview makes the following statement:

"I have been away over a month on business, and notwithstanding my varied experience, I must confess my surprise and amazement at what I found to be the coming industry of a portion of Georgia. I allude to the peach crop now being raised in the vicinity of Fort Valley and Marshallville. This industry, which owes its origin to the brain and energy of Mr. S. H. Rumph, of Marshallville, has been taken up by the farmers of like ability to such an extent that the enterprise is now known well nigh all over the United States.

"Think of a million peach trees being planted that will bear in two or three years from now. Allowing three pecks of fruit to a tree (about half a crop), and as a crate contains just three pecks, you will have a crop of 100,000 crates or 2,000 carloads of peaches. Of course this estimate is based on a season when the crop is not killed out by frost in the spring.

"The country around Fort Valley and Marshallville is one of the most fertile regions in Georgia, and almost anything will grow there. Peaches ought to pay well in South Carolina too. The Georgia fruit brings \$3.00 to \$5.00 per crate in New York and Chicago, so that with a good season \$300 to \$500 per acre can be realized on peaches.

"The peach industry is a paying business, and if some of the farmers in our State would take it up and give it the proper attention there is no reason why they should not make a good thing out of it."

MAJOR JOSEPH KIRKLAND, in an article in the August *New England Magazine*, epigrammatically sums up the great Chicago fire in this wise: "In 1871 a conspiracy was formed against the young, frail, vain, boastful, foolish, prosperous, hopeful city of Chicago, the conspirators being the drought, the southwest trade wind, a lamp, a cow and the devil."

#### A National Physical Laboratory.

[Condensed from an article by Arthur G. Webster, Ph.D., in the *Pedagogical Seminary*.]

The people of this country are popularly supposed to stand among the first in their appreciation of the benefits of science. Our government has extended its hand to the support of special branches of scientific work which were especially necessary to the welfare of the people and which required to be prosecuted on a large scale. Such are the Coast and Geodetic Survey, which determines the form and position of the parts of our country; the Geological Survey, which, in addition to the form, tells us what the nature of our land is and what it contains; the Weather Bureau, which not only furnishes us with important data with respect to the climate of the various portions of the country, but each day tells us what weather we may expect. The Bureau of Weights and Measures, representing a function of government only less important than the regulation of the coinage, but in this country put in charge of the Coast Survey, and the National Astronomical Observatory are further examples of State scientific establishments. All these departments are concerned principally with the accurate measurement of quantities, which gives them a certain nature in common, distinguishing them from branches of the purely observational and descriptive sciences, such as Biology.

In view of the above facts, it seems strange that the government supports no distinct institution devoted to the cultivation and furtherance of that great mother-science, which includes all that has been mentioned, the great measuring-science, physics. Why have we no national physical laboratory? Answers of various sorts might be made. In the first place, the development of physics as an exact science has been comparatively recent, and its study as a subject by itself is so new that many fairly educated persons to whom the words geology or chemistry convey distinct suggestions, receive from the term physics no idea at all. Furthermore, physical laboratories are decidedly new affairs. I believe it would be no exaggeration to say that twenty years ago there was not in this country a single building devoted solely to the purposes of a physical laboratory. Most of the large college laboratories have been erected within the last ten years, and now we have some half dozen that will compare well with any university laboratories in Europe. Perhaps, therefore, it is but natural that the government has not yet instituted such an establishment. The time, however, now seems ripe. The line of activity of the institution would be manifold. To mention some of its practical fields of work, it would examine the physical properties of various materials used in the arts and trades—for instance, of various sorts of iron, steel and copper, demanded by the electrical industry. Experiments would be made upon new alloys, and their fitness for technical applications. A great department would be the testing and standardizing of measuring instruments of various sorts. This is obviously a function of government as much as the regulation of coinage. As in trade no one thinks of taking in payment pieces of gold or silver stated to have certain values, but demands coins stamped by the government, so we should not be and are not satisfied with measures and weights issued by irresponsible parties, but demand a verification by State authority. Similar considerations apply to other measures of all sorts. The electrical trade, which has in the past few years made such tremendous strides, calls for a great number of instruments of measurement, most of which are at present graduated without control by anyone ex-

cept their makers. We all know by sad experience how irregular our gas meters are liable to be in their indications, and how inclined they are to count up quantities of gas when our houses are closed. On their part the gas companies complain of errors to their disadvantage. Shall we be obliged to suffer the same inconvenience with the electric light? With electric measurements capable of being made with the precision that they have now reached, how long shall we put up with instruments of an accuracy depending only on the sweet will of their makers, and often giving indications wrong by 10 per cent? Why should we pay for light by the lamp hour without having it specified how brightly the lamp is to burn? Authoritative testing of the measuring instruments would remedy these uncertainties. Further, the testing of the performance of dynamos and electric motors would be performed in a laboratory such as is proposed.

When the dynamos to be used in the electric executions in New York were procured, it was necessary that they should be tested in order to determine under what conditions they would produce the current and pressure which had been decided upon. There being no public laboratory, either of the State of New York or of the general government, the tests were carried out at the physical laboratory of the Johns Hopkins University, which has excellent facilities for such tests. Many of the colleges and technical schools also engage in the testing of electrical apparatus, and it may be asked why it should not be left to them. It seems clear, however, that the duty of college professors and instructors consists in the instruction of the pupils committed to them, and pre-eminently in the advancement of the sciences which they profess, rather than in the earning of fees by making electrical tests or chemical analyses. For these purposes special establishments not engaged in teaching are better adapted.

Physical work is now done in Washington in the following government institutions: The Coast and Geodetic Survey, including the Bureau of Weights and Measures, the Naval Observatory and the Magnetic Observatory but recently established. The Geological Survey maintains a small physical laboratory, where excellent work has been done. More or less direct physical research is also done by the Weather Bureau. The establishment of a central laboratory would facilitate the work of all the above, though it need not supersede them. Finally, by the efforts of one who stands among those whose names are best known in Europe to the credit of American science, Professor Langley, now of the Smithsonian Institution, there is now being opened in Washington an observatory for the study of the physics of the sun and stars. In this we are but following in the steps of Germany and France, whose astrophysical observatories at Potsdam and Meudon are splendid examples of government support of research. The writer has but recently learned that as long ago as 1884 a committee of the National Academy of Sciences recommended to Congress the establishment of a government research and standardizing physical laboratory. Whatever came of the recommendation is to him unknown, and he has therefore taken the liberty of putting forth this plea, having been stimulated thereto by watching the development of a similar institution in Germany. While we, who pride ourselves on our practicality and interest in science, have been waiting, conservative Germany has gone ahead and completed the most splendid institution of the kind now existing, the new Imperial Physico-Technical Institute in Charlottenburg, Berlin, which is under the direction of the greatest of living scientists, Hermann von Helmholtz.

The Reichsanstalt consists of two departments, the first or physical section and



the second or technical section, the duties of which are, to quote from the programme of the institution:

## SECTION I.

1. The performance of physical investigations and measurements which tend pre-eminently to the solution of physical problems of great scope and importance in a theoretical or practical direction, and which demand a greater outlay in instrumental equipment, consumption of material or time of observers and computers than can, as a rule, be offered by private individuals or educational institutions.

2. The solution of matters from the domain of Section II, as far as the equipment of the latter may be insufficient for their accomplishment.

## SECTION II.

1. The execution of such physical or physico-technical investigations as are directed by the official authorities, or are designed to further precise machine construction, or, where possible, other branches of German industry.

In particular enter into consideration:

(a) Investigations on properties of materials.

(b) Fixing of methods for the preparation of materials.

(c) Experiments on the most suitable design and methods for the construction of physical and technical measuring instruments.

2. Verification of measuring apparatus and instruments of control, as far as they do not lie in the domain of weights and measures; determination of the errors of graduation of such instruments and issuance of certificates as to the result.

3. Construction of instruments and parts of instruments, as well as the execution of other mechanical work for the needs of the Reichsanstalt itself, or for German state institutions and authorities, in so far as their procuring from domestic or private workshops gives rise to difficulties.

4. In special cases the construction of parts of instruments for Germans engaged in business, in so far as the construction in private shops necessitates extraordinary means.

In cases 3 and 4, in estimating the price to be charged, the cost of materials and twice the time expended on the mechanical work are to be reckoned.

It will be seen that the provisions of the Sections I (c) and of 3 and 4 may become of great practical advantage, and would be of great weight in America. By far the greater part of the instruments of precision used in the laboratories of this country are imported from abroad, for the reason that our constructors have, with a few notable exceptions, neither the experience nor the scientific knowledge to design proper forms. No amount of protective duties will succeed in building up such an industry as this until the necessary knowledge is forthcoming on the part of the constructors. A duty of 60 per cent. upon optical glasses has not resulted in producing any American microscopes that will compete with the remarkable apochromatic objectives of Zeiss or Jena. On the other hand, Alvan Clark & Sons, of Cambridge, have constructed telescope lenses, and Brashear, of Allegheny, constructs optical glasses and spectroscopic gratings (to be ruled upon Prof. Rowland's engine in Baltimore) which are without rivals in the world, because here thorough study and dearly-bought experience of years have preceded success. Brains, not tariffs, have brought about these results.

The government of the Reichsanstalt is vested in a curatorial board, consisting of twenty or thirty of the most distinguished physicists in Germany (the president of the institution being *ex officio* a member) who meet yearly and serve without pay, except when traveling on business of the institute.

The staff of the institute consisted, at the

end of 1890, besides the president and director of the second section, of seven members, seven assistants, seven scientific and technical employees, four technical helpers, ten machinists, engineers and manual laborers of various kinds. The bureau consists of four secretaries and clerks and the necessary subordinates. In all there are employed in the Reichsanstalt forty-nine officials and other persons. Several of the members had been associated with the International Bureau of Weights and Measures, and the assistants are young men who have recently made their doctor's degrees at the universities. Provision is made for the reception of volunteers and for the invitation of distinguished physicists to make use of the laboratory in important researches.

Among the most completely-organized tests have been those of thermometers, particularly for physicians. The demand for such certified thermometers has been so great that a branch station has been established in Ilmenau, in Thuringia, in the midst of the glass industry, which during the first year of its existence issued certificates for over 20,000 thermometers. In consequence of the establishment of this testing station the exportation of German thermometers has more than trebled since 1885.

Besides thermometers, mercury and aneroid barometers and pressure gauges for steam boilers have been tested. The electrical sub-section has been particularly active. In addition to the examination of alloys suitable for the manufacture of wire for electrical instruments, it has tested commercial gauges for current strength and electrical pressure and consumers' meters, and has shown the defects of present constructions, so that great improvements may be soon expected; batteries and storage cells have also been tested.

Besides the optical work already mentioned, commercial electric arc and glow lamps have been tested, optical glasses, lenses, prisms and telescopes have been examined.

The question of the pitch of tuning forks is an important one, bearing upon the tuning of instruments according to a normal pitch. Experiments have been made on methods of determining the number of vibrations per second of tuning forks, with the result that a standard fork has been made whose vibration number is correct to an accuracy of one part in fifty thousand. With this have been already compared some eight hundred forks which have been sent in by musicians.

The introduction of a uniform system of screw threads for fine mechanism has been an often-attempted problem, aiming to make possible interchangeability of parts and the alteration of repair of machines constructed in one shop, in others in different places or countries. This subject has occupied the section for a year and a-half, and much valuable progress has been made. Researches on the tempering of steel, and on the separation of platinum and zinc from other impurities, have been further items in the work.

Such is a brief and imperfect description of what Germany has recently done for physical research. In England the need of a similar institution was mooted by Prof. Oliver J. Lodge, in his presidential address to the physical section of the British Association last summer. The London Board of Trade has already opened an electric standardizing laboratory. France has for a hundred years had its *Conservatoire des Arts et Metiers*, and an electrical testing laboratory was opened in Paris several years ago. Switzerland has spent a million francs upon the new physical laboratory of her Polytechnic School in Zurich. Shall America be left behind? How long must we import our scientific instruments from Europe? If, as General Miles lately proposed, our national guard

shall mobilize at the World's Fair, shall every band have its instrument tuned differently, or shall each bandmaster be supplied with a French tuning-fork? If we must imitate Europe, let it be in attempts to cultivate art and science. Why should we have an imitation of the Eiffel Tower if it is to show nothing more than increased height? If America must lead in bigness, let it be to some purpose. If Germany, groaning under the weight of her standing army, can do what she does for science, shall we be content to look on and admire, or shall we not rather be spurred on to emulation?

### The South and Its Fight for Prosperity.

[From the Baltimore Sun.]

The New York *Herald*, in commenting upon an article by Mr. Richard H. Edmonds in the *Forum* for August upon the progress and development in the South during the decade closing with 1891, refers especially to the increase in assessed wealth of the Southern States of over two thousand millions of dollars, and the vast increase in the products of the mines, the fields, the factories and the forests, which are almost without a parallel in industrial history. It is a great pity that sectional and political hatreds should ever interfere to shut out these facts in the interest of local or party supremacy. While the development of the South has been less exuberant and rapid during the latter years of the decade, the tide has not ebbed, but is flowing surely and steadily over manifest obstacles. Two causes have operated to arrest the advance of the South, against which it is still struggling nobly. One of these was the Argentina financial collapse and the failure of Baring Bros., and the other and really the principal one, the force bill agitation by the Fifty-First Congress. Previously to the Argentina affair there was a great influx of European capital into the Southern States. English capitalists were visiting them, subscribing for the shares of railroads, mining companies and factories. But the Baring failure impaired confidence in all American securities, and the capital which is so sorely needed in the South ceased to come from abroad.

The force bill was a more serious matter still. Its avowed object was to restore the carpet-bag and negro governments of reconstruction times. Under such governments it was understood in England and in the North, as well as in the South, that no property would be secure. Of the old carpet-bag governments Judge Jeremiah S. Black, in his vigorous style, wrote that in comparison with their devastation the war was comparatively harmless; that a general conflagration which would sweep from the face of the country every particle of visible wealth, leaving only the bare soil, would be in comparison a blessing of Providence, for the carpet-baggers had not only destroyed the value of property and confiscated everything in sight, but by pledging the credit of the States and selling their bonds they had succeeded in running their felonious fingers into the pockets of posterity and robbing children of their heritage whose fathers were yet unborn. The natural effect of a bare suggestion of restoring by force such governments as these was, of course, to paralyze all industry in the threatened States. The threat is not yet removed, and the result depends upon this presidential election. The Republican platform pledges the party to the force bill, and Mr. Harrison, in his messages, has enforced it. We may, therefore, conclude that the Republicans will enact the law if the people place the power to do so in their hands.

In spite of the drawback which the dread of this infamous scheme has caused, the wealth and industry of the South has steadily increased, showing a vigor and enterprise among the Southern people and

those who have come from the North to embark their fortunes with them, so far superior to all difficulties and disadvantages.

In commenting upon the situation the *Herald* justly says: "All praise to the South for its past achievements. All success to its future enterprise. But a few years ago its territory was dotted with fresh battlefields that told memorable stories of devastation. Its people were impoverished, its industries paralyzed, its future clouded. Devastated by war, oppressed by reconstruction legislation, menaced by Northern political domination, the South has shown a pluck and enterprise and achieved a success that cannot fail to command the admiration of the world. May it move steadily on in the highway of industrial and commercial progress."

### Use and Misuse of Petroleum as Fuel.

The *Iron Age* has recently printed two interesting contributions on the use of oil for fuel purposes, the substance of which we give below in much condensed form:

Considered from a standpoint of economy, the value of petroleum as a fuel is based upon its cost per unit of work accomplished as against the cost per unit of work of other fuel. Coal being the fuel most generally used, the comparison is between it and petroleum. In a boiler plant of 1,000 horse-power, nominal rating, the quantity of coal required at thirty pounds of water per horse-power would be 3.75 pounds coal per horse-power, or, for ten hours and 1,000 horse-power, 18½ tons of coal per day, costing, at \$3.00 per ton, \$56.25. To operate the boilers, remove ashes, etc., will cost:

5 firemen, at \$2.25 per day.....	\$11.25
1 water-tender, at \$2.50 per day.....	2.50
3 laborers, at \$1.75 per day.....	5.25
4 tons ashes, 50 cents per ton to remove.....	2.00
18½ tons coal, at \$3.00.....	56.25

Total for 1,000 horse-power.....\$77.25

With oil as fuel, on the basis of 2.56 pounds oil per horse-power per hour, or 3,526.8 gallons for 1,000 horse-power in ten hours—this, at 1.6 cents per gallon, is \$56.43, or eighteen cents more than the cost of coal. The economy, however, is in the labor of handling, and the cost of operating a battery of 1,000 horse-power would be as follows:

1 water-tender and fireman, at \$2.50.....	\$2.50
3,526.8 gallons oil, at 1.6 cents.....	\$56.43

Total.....\$58.93  
Add 2½ per cent. for steam used for burn-  
ers, etc.....1.47

Total cost for 1,000 horse power.....\$60.40

Total cost with coal.....77.25

Balance in favor of oil.....\$16.85

When a battery of larger size is used this saving will be largely increased, as the item of attendance in the case of oil would remain the same.

Perfect combustion is the important feature in using petroleum. The absence of smoke cannot be accepted as a proof of this, as it may mean an excess of air, which is quite as unsatisfactory as not enough. The condition of the brick work and character of the flame under the boiler are the only safe guides to go by and must be carefully observed, and the supply of oil or air regulated accordingly.

A NEW line of steamships has been placed in the New Orleans, Mediterranean and Adriatic trade, the forerunner of which is the British steamship *Indian Prince*. She will be followed by the steamers *Ocean Prince*, *Eastern Prince*, *Imperial Prince* and others. Knott's *Prince Line*, which consists of a fleet of over 100 steamers, will prove a valuable acquisition to the trade of the port. Messrs. Ross, Howe & Merrow, No. 198 Gravier street, are the agents of this line, and also of the Crescent Line of steamers, which will ply between New Orleans and Rotterdam, the pioneer steamer *Bamboro* being now due with a large cargo from Antwerp and Bordeaux.

## TEXTILES.

[A complete record of new textile enterprises in the South will be found in the Construction Department, on pages 38 and 39.]

### What Southern Bleacheries Would Save.

By Herbert G. McKerrow.

It is to a certain extent possible to estimate in dollars and cents the degree to which Southern manufacturers would profit by having a bleaching industry within the territory enclosed by their direct personal interests. On the basis of arrangement sketched out in a former paper, whereby the manufactured product is sent for treatment from Southern mills to bleacheries in the East, wholly on the responsibility of the Southern manufacturer, there is naturally an accumulation of expense to the latter which would not obtain under a local development of similar facilities.

The most common way of according the financial responsibility for these final processes in manufacturing is for the bleacher to make a charge to the manufacturer for bleaching and finishing certain quantities of certain kinds of goods, a report being made at the same time of the number of yards received, and also of the number of yards cased up and forwarded subsequently to the commission agent. Demonstration is thereby made of the percentage of gain in length through the "stretch" of the various treatments which the goods have received.

By this arrangement also the Southern manufacturer pays the entire freight charges from his mill to the bleachery, while the latter establishment ostensibly pays the same charges on cased goods to the commission agent or other centre for distribution. It is hardly to be supposed, however, that this last expense for transport is borne entirely by the bleachery; the charges for bleaching and finishing are most probably adjusted in such a manner as to cover this matter. In other words, the Southern manufacturer pays the freight charges on his baled goods to the Eastern bleacheries, pays the entire cost of the bleaching and finishing they receive, and finally, most probably, is made to pay the freight charges on the cased goods sent to the agencies for selling.

A certain margin of compensation is undoubtedly obtained in the above-mentioned "stretch" of the goods, but this increase is not usually more than 4 per cent. at the utmost, and varies very considerably in fabrics of various grades and diverse weights. Moreover, all those matters of increase and general differences which may show themselves in practical treatment would be fully as great in a Southern as in a Northern or an Eastern bleachery, and cannot, therefore, be considered as a gain accruing solely to the present methods. With matured facilities it is only fair to assume that the fullest benefit from such matters would be obtained, and that the practical cost of these operations would be at least as low in the South as similar undertakings in the East, possibly from climatic and other influences even lower.

At the present time the average cost of finishing Southern manufactured goods in the Eastern bleacheries is about .44 of a cent per yard. This naturally varies considerably in the various lines and qualities of cloth, some being as low as .30 and others as high as .66 of a cent per yard.

Making allowance, therefore, for the gain in length incurred during the operations, it may be said generally that the cost to finish these goods averages from .30 to .55 of a cent per yard. To this must be added the two sets of freight charges now paid, and of these the larger one at least could be saved were it possible to obtain the bleaching and finishing treatments in

the neighborhood where the goods are manufactured. Where it now requires shipment from the Southern States to Massachusetts, Rhode Island or Maine, and thence back again to Boston, New York or Baltimore, and in the case of the few mills selling their own goods, back again in large part to the Southern States, one shipment only of finished and cased goods would then be made from the Southern bleacheries to the selected point for distribution.

This matter of freight undoubtedly will constitute the largest pecuniary saving to Southern manufacturers by an alteration of the present system, but the advantages which will be obtained by personal oversight and direction and by the great saving of the time now lost during shipment will also be considerable. The freight charges at present in vogue, while varying in different localities, bring up the average total cost to the Southern manufacturer for this business to about .64 of a cent per yard, and of this, by the establishment of this industry in the Southern States, it is fair to assume that from .15 to .25 of a cent per yard would be saved. Applying these figures to the number of yards of cloth mentioned in a former article as being the daily products by mills in the Southern States of goods to be consigned to bleacheries, it is seen that in the sixty tons or 480,000 yards so mentioned there is a clear net saving of from \$720 to \$1,200 per day, or an annual gain of \$223,200 to \$372,000 to the manufacturing interests of the South. Thus in four years, at most, the actual saving, apart from all other advantages, would be enough to offset the cost of establishing bleaching and finishing works sufficient in number and capacity to take due care of the whole product.

Owing to the peculiar nature of the subject, the statistics are perhaps more general than exact, but the actual figures given to the writer by various Southern manufacturers justify the above calculations as fair average statements of the present state of affairs, giving him the ground to make the above inferential estimate of the saving to be obtained by the development in the South of this new industry.

It would, perhaps, be opportune to speak of certain matters here which may be classed as difficulties in the way of such a projected enterprise—obstacles which, while not fatal, will probably necessitate some appreciable degree of foresight to overcome. One of these difficulties is the great scarcity in the South of light, soft woods from which the cases to contain the finished bleached product may be made. All through the manufacturing regions there seems to be an unfailing predominance of hard, heavy and resinous lumber, and the use of this for cases would perform add greatly to the weight of these cases and consequently lead to increased expense in the matter of freight charges. Whether this obstacle could be practically and successfully overcome future experiences alone will show.

Again, the difficulty which will be experienced by the railroads in carrying the various chemicals needed in bleacheries and dye-houses, more especially the acids, may be considerable, for even on the most level and well-laid tracks the transportation of carboys of acids entails a large degree of destruction to the rolling stock. It may even be found necessary (as it is in many parts of this country and of Europe) to establish with the bleacheries chemical retorts and plants for the manufacture of acids and certain of the alkalis.

One other matter is worthy of mention—a matter which possesses more an ethical than a technical value in connection with this project—a matter to be approached with deference in an attitude of regretful criticism. No one traveling in the South among manufacturing circles can fail to be impressed by the regrettable lack of cohesion among the Southern manufac-

turers. There seems to be what might be called a widespread individual insulation of an equally offensive and defensive character. It may be that we are here touching upon an ethical characteristic, the product of a former civilization in which the *laissez faire* principle of modern business life had no existence; in which neither individual necessities nor advantages brought one person very much into intimate contact with another, nor made the existence of one in any way dependent upon that of another. The fact remains that there is a large absence of fellowship of commercial camaraderie among Southern mill owners. Few of these are willing to speak in anything but a critical way of neighbors and possible competitors, and it is but seldom that an instance may be found of one gentleman who is intimately acquainted with the interior of his neighbor's mill.

An explanation may be found for this perhaps in the fact that when cotton manufacturing was in its infancy in this section of the country, during the so-called days of "reconstruction," the greatest difficulty to be contended with was the inadequate supply of labor for the new mills coming into existence at every point. This naturally led somewhat to a keen struggle for the possession of this help, and it was not unusual for one mill owner to make an effort to induce the operatives of another to transfer their allegiance to him.

While time and the phenomenal developments of the cotton industry have almost entirely obliterated the necessity for this kind of competition, it is very probable that in some localities the jealousy it caused in the early days has not yet entirely died. Yet that its cessation would be an enormous boon to the South can hardly be doubted. An increased degree of communion and mutual appreciation among Southern manufacturers would add an incentive to the inauguration of new enterprises and the development of those already extant that would, without doubt, lead to an increase of industrial progress to be obtained from hardly any other cause.

### Handling and Mixing Cotton.

A correspondent of the Boston *Journal of Commerce* writes as follows about the condition of cotton as received at the mill, which will be read with interest in connection with the articles on marketing cotton which we printed in our last issue:

The uneven state of yarns noticed in the majority of our mills has called forth the opinions as to the cause from many of our practical carders and manufacturers. Almost all the known reasons arising from imperfect machinery, or, though the machinery was as good as the age we live in knows, yet, from the difference of opinion in regard to adjusting and setting the various parts, as well as the inefficiency of those who may be in charge at some places, both from the buying, sampling, mixing, picking, and, in fact, all other processes, have been well pointed out. And with the experience of many of our manufacturers and all these opinions, from observation and practical experience, we must conclude these results are not reached through ignorance. What good work could be done in most of our mills if our carders, as a rule, could have the power to reject at the bale what would be a certain loss at the loom; but I should like to know where the place is that the carder's opinion is even asked, with a view as to whether it shall be rejected or accepted. In fact, how very few of our invoices of cotton are sampled after they reach the mill and are compared with the sample purchased from.

Again, what good work could be made in most of our mills if the heads of the several departments could regulate the draft and weight of laps and sliver at the various

machines at each process, if they could run each machine at the speed and with the draft at same that their best judgment tells them would make the best sliver roving, yarn or cloth, or if these men were hired to produce quality and make everything else subservient to that. But alas! how far from this are the facts. And yet many of our best papers on the present methods of manufacturing would seem to indicate that because this was not allowed these men were put to a great disadvantage, which, in a great measure, is true. While we are pointing out the faults and failings of this machine and that method of ruining the work, we must not lose sight of the fact that the underlying aim of all our mills is to make money. It is very nice, indeed, when we wish to send a sample of what we can do to some exhibition where it is desirable to get a good name, or to work some fine sample with a view to get an order that will pay well, many of us know the extra care bestowed, and we also know how pleasant it was to have time to bestow the care. Under these circumstances our heads of departments, as well as our superintendents, have an opportunity to show that they can produce quality.

But we do see poorer carding and picking than we wish to make, and the best of our pickers and carders see it, and after doing all they know how do not get the results they wish. Then we know this means uneven roving, and though we put in all the doublings we can afford to, with the allowance we have for picking, carding, etc., in the endeavor to even up these discrepancies, and, feeling we have done well, all things considered, yet we sigh, as we must know the yarn, hence the cloth, must be very uneven. What shall we do then, seeing that we cannot get what our common sense, gained through experience, tells us would be best and in the end make more money? I know of no other way than the old adage, "Keep a hammering." If we look back we must find there have been many changes for the better of late years which would not have come to pass only for this "hammering." One man drops out that wore his great-grandfather's shoes, and would never leave the old rut, but a new one drops in, and so we get the changes. So let us keep on. We may not all agree at times, but no fair minded reader can say he has not been helped, no matter how much he knew. We cannot all sing bass or all play trombones, but each on our own instrument (for there are few that can play them all well), but altogether we may make quite a harmonious strain on manufacturing.

I, for one, would like to see the old system of sampling each bale before mixing, as I did years ago, when, as the bales landed from the boat, two men went around with a broad axe and baskets, with a large block of paper, on which the marks on the bale were carefully copied on paper and a duplicate made in a book. Then one man took the axe and made a deep cut in the bale; then thrusting his hand well in he would take out a handful, lapping it up in the paper on which the marks of the bales were copied, with the marks inside. The cotton was purchased from these samples, and after the purchase was made these samples were forwarded direct to the mill. Then, as soon as the bales arrived, each bale was carefully compared with the sample, and any bale not coming up to the sample after another careful comparison is put on one side and the parts of two samples sent back to the broker, while the duplicates are kept at the mill, where the bale remains waiting the broker's statement of rebate or return. Now, this may seem to some quite a tedious process, but it is soon got used to, and it certainly pays. There is no need, then, for selecting the best bales to put away for dog days. This can all be done in the purchase. We



know that well-matured cotton that has not suffered either by drouth or too much rain will, as well as having an abundance of convolutions, have a sufficiency of its natural waxy oil to fit it for the process it has to go through.

It is hoped that we have entered a new era in preparing cotton. We know that almost, if not all, of this oil or wax is taken out of the cotton when it is dyed, as has become common these late years, instead of dyeing so much of it in the skein after it is spun into yarn and when it is bleached; and although we know that wool and cotton are two different natures altogether, yet we are well aware that the wool has to be treated with oil, having lost its natural oil through washing and scouring, and when cotton and wool mixes are made we know the cotton partakes of the oil put on the wool. Now, are we not lax in appropriating this beneficial effect in our cotton, especially for colored cotton as well as bleached? May we not with very great profit use some of the oils which would not affect the color, and use it in sufficient quantities to replace what the dyeing or bleaching took out? How it would kill electricity and help in the blacks and browns, and on that class of goods where the price of the manufactured article will not permit the use of a fine grade of cotton. How a little sprinkling of some light oil would help it through the different processes, both increasing production, lessening the waste account, and proving a blessing to those employed at the work. It would also open a new business in oils and give ample scope for some of our smart chemists to so adulterate either some kind of poor oil or good water and soap as to cost next to nothing. It would call up some new mode of mixing and atomizers for the purpose, but it would certainly fill up a long-felt want.

#### Linen-Making in Virginia.

The Department of Agriculture has just issued a report on flax culture for fibre in the United States, by Charles Richard Dodge, which gives a very comprehensive view of the industry as it now exists, with considerable data regarding flax culture in Ireland, Belgium, Austria and Russia. One of the interesting passages in Mr. Dodge's report is the following reference to the culture of flax and the manufacture of linens in Virginia:

Lee county, Va., is the center of a very interesting flax industry, a remnant of the old household linen manufacture of our grandmothers' day. The department had knowledge of the fact that flax is still grown and manufactured by farmers in a few localities, chiefly in the Middle Southern States, the Virginias especially, though no previous effort has been made to learn the details of the industry.

Recently, however, the census office has had considerable correspondence with citizens of Lee county, Va., relative to the matter, and it is from this correspondence, kindly placed at the disposal of the Department of Agriculture by Mr. John Hyde, special agent in charge of agriculture, that the following interesting facts are gleaned. The returns of the census enumerators having shown not a little flax "manufacture" in this section, where the existence of linen mills was not known, letters of inquiry were sent out, the replies showing quite an extensive home manufacture. In the first of these replies it is stated that a considerable number of the farmers of the section raise flax, which is manufactured by their families into linen of good quality. "They break, scutch, spin and weave on machinery made by themselves, and all of it is used at home for home consumption."

The following extract from another communication embodying the chief information relative to this industry will suffice: Concerning the value per acre of the flax prod-

uct by Lee county, in my opinion there are various reasons why the flax grown in this country in the year preceding the last census was very valuable by the acre.

(1.) There were at that time no railroads in the county, but there were then and there are yet plenty of mountains, hills and bad roads, over which goods brought into the county had to be transported by wagons from twenty to fifty miles. Consequently the people who consume more flax products than they produce had to pay the merchants an enormous per cent. on nearly all goods, including linens, ropes, thread and other products of flax and, very naturally, they valued their own home made linens, etc. (which were of better quality but coarser than those bought from the store), in accordance with the prices they had to pay the merchant for similar goods.

(2.) Generally very small patches of flax are raised on choice spots of land; consequently, very good preparation of land, seeding in the right time and harvesting with care can all be attended to in a much better manner than could be done if the farmer had large areas in flax; for this reason the yield per acre is much greater on small patches than it would be if large areas were raised.

(3.) The flax is watered in swathes on the ground by rain and dew; broken on a bench-shaped wooden break; cleaned on a board set in the ground with a wooden knife, then hackled on an iron-toothed hackle, spun on a "little wheel" and woven on a home-made wooden loom or manufactured on wooden ropeworks into linens, ropes, thread, etc., by the producers at home when they have not much else to do but eat and drink the products of their farms, which are not considered very costly, and therefore they do not consider that there has been much cost attached to the manufacture of their linens, etc. If linen can be made without much cost and save paying the store prices the material used is valuable.

The foregoing reasons, I hope, will give some light upon the fact that the flax product of Lee county, Va., was considered so valuable per acre. It was the case that all, or at least nearly all, the flax raised in this county was used in the manufacture of home made linens, etc. So far as I am informed, no flax from the county was sent to any factory.

While this report was going through the press I visited this interesting section of Virginia for the purpose of investigating the methods of culture in vogue, the preparation of the fibre and the home manufacture of linen, the results of which will appear in a future bulletin. Beautiful examples of scutched and hackled flax were obtained; also samples of linen in variety and of the rude appliances used in preparing the fibre and manufacturing it. Altogether, the flax industry of Lee county, Va., declining as it is, forms a most interesting study in connection with the subject of flax culture for fibre in the United States.

#### New Process of Warping and Beaming.

A new process of warping and beaming has been inaugurated at Westfield, Mass., by the building of a machine which takes the yarn direct from the cop or bobbin and winds it upon the  $\frac{3}{8}$  inch skewer, entirely dispensing with the spools now used in creels for warping. By winding on the skewer direct the space occupied by the heads and barrel of the spool is entirely used for yarn, thus making a great gain in quantity, reducing waste and enabling one tube of this yarn to make two warps with one tying in, thus securing great saving in time.—*The Manufacturer*, Philadelphia.

#### Southern Textile Notes.

THE Little Rock (Ark.) Cotton Mills, manufacturers of white and colored yarns, is thinking of putting in its plant another twister and belling machines. The officers of this company are N. Kupferle, president; Robert Greer, vice-president, and C. T. Walker, secretary and treasurer.

THE Greenville (Miss.) Land & Manufacturing Co. is endeavoring to make arrangements for the erection of a cotton factory at Greenville.

THE Riverside Cotton Mills, of Danville, Va., write that the new machinery which they have put in consists of six spinning frames, 208 spindles each, and twenty-four looms. They have also enlarged their

boiler-house and built an additional dry-room. The above outfit was furnished by the Lowell (Mass.) Machine Shop.

THE Georgia Manufacturing Co. has recently built a new office and addition to its cotton yarn mill at Gainesville. The addition is a two-story building, 50x22 feet, and will be equipped with machinery, including a new Denn warper, to double the plant's present capacity. The company has 1,400 spindles running now. The above machinery will all be furnished by the Lowell (Mass.) Machine shop.

THE Chester (S. C.) Manufacturing Co. has its rebuilt gingham mills in operation, running 200 looms, which number is to be steadily increased until the plant's full complement of 400 looms is running.

THE Enterprise Manufacturing Co., the new mill company at King's Mountain, N. C., is at work on its new cotton mill which is to start with 2,500 spindles. W. O. Ware is president of the company, and C. E. Falls, general manager, and they expect the plant to be completed in the early fall.

THE Bridgewater (Va.) Manufacturing Co., manufacturers of all-wool blankets, made 680 pairs during July.

THE Dartmouth Spinning Co., of Augusta, Ga., manufacturers of 6s to 20s yarns, is putting in its factory a number of Howard & Bullough electric stop-motion drawing frames, made by C. E. Riley & Co., of Boston, Mass. This plant operates 10,216 ring and mule spindles by water power. Chas. E. Claghorn is president of the company; Arthur H. Earle, secretary and treasurer, and Henry L. Witham is mill superintendent.

THE Pioneer Worsted Co., recently noted as having decided to double the capacity of its worsted and yarn mill, has placed orders for the necessary machinery, which will consist of 3,500 spindles. This plant's product numbers 10s to 40s, and on 3,500 spindles it produced last year 427,000 pounds. The officers of the company are L. Richardson, president; Walker Richardson, treasurer, and R. M. Cunningham, secretary, and they are contemplating adding weaving machinery. James Pickles is mill superintendent.

THE Kincaid Manufacturing Co. has recently added machinery to its cotton mill at Griffin, Ga., and considerably improved its dyehouse. The output of this plant consists of plaids, stripes, ticks, sheetings and all grades of towels, in the manufacture of which 6,410 spindles, 200 looms and forty-eight cards are operated. The officers of the company are: President, W. J. Kincaid; vice-president, S. Grant; treasurer, Jas. M. Browner, and superintendent, W. I. Woodward.

THE Exposition Cotton Mill at Atlanta, Ga., has put new clothing on its cards and put in an automatic sprinkler system. This plant operates 16,000 spindles and 480 looms, and has an average weekly production of about 54,000 pounds of Nos. 12 $\frac{1}{2}$  to 13 $\frac{1}{2}$ .

In a recent speech the president of the Piedmont Cotton Mills stated that one bale of cotton made into cloth was worth \$70, just twice as much as the bale of raw cotton. He further stated that their cotton mills paid to the laborers in their district over \$1,000,000 annually, and that the company was giving 1,600 children their education at no cost to their parents. These facts speak well of the policy pursued by the company.

A MOVEMENT for the erection of a cotton factory at Tarboro, N. C., is now being pushed and the matter is in the hands of N. M. Lawrence. It is proposed to organize a co-operative stock company with a capital of \$100,000, and Mr. Lawrence has already prepared a prospectus and begun canvassing for subscriptions. The number of shares is to be 1,000 at a value of \$100 each, and when 500 shares have been sub-

scribed for the stockholders will meet and organize.

THE Gaffney (S. C.) Manufacturing Co., recently chartered, has been organized, and Mr. H. D. Wheat, formerly superintendent of the Clifton Cotton Mills, has been elected president and treasurer. This company's capital stock is placed at \$100,000, and its mill is to be equipped with 5,000 spindles and 200 looms.

THE Hamburger Cotton Mills, of Columbus, Ga., intends discarding some of its old machinery and putting in new instead, such as spinning machinery, slubbers and fly frames.

Two carloads of fly frames have been received by the Lexington (S. C.) Manufacturing Co. for their new cotton mill.

MESSRS. McLACHLAN, CONDE & CO., of Schenectady, N. Y., write that they expect to remove their knitting mill to Bridgeport, Ala., during the coming winter.

THE first bale of Georgia cotton for the season of 1892 was received at Columbus, Ga., on the 5th instant. It was shipped by L. A. Lowrey & Son, of Dawson, to Carter & Bradley, who sold it to J. B. Holst & Co. at eight cents. The bale weighed 468 pounds and was classed as middling, bringing \$37.44.

THE Laurel Mills Manufacturing Co., at Roswell, Ga., manufacturers of jeans, tweeds, linseys and doeskins, has built an addition to its drying-room to double its capacity and greatly improved its picker-room, including the introduction of a new Cleveland picker. The plant operates three sets cards and thirty-six looms. The following are the directory: S. H. Griffin, president; H. R. McDerment, secretary, and T. S. Hudlow, superintendent.

#### Coal and Coke Notes.

SHIPMENTS of coal and coke over the Norfolk & Western Railroad in July averaged over 400 cars daily.

THE Dunlow (W. Va.) Coal Co.'s new tippie is completed and the mines are in shape for practical working, and a large daily output is expected.

SOME extensive improvements are now in progress at the George's Creek Coal & Iron Co.'s No. 2 mine at Lonaconing, Md., including a new 300 horse-power engine and boiler, which will double the company's capacity for hauling from the mine by cable.

THE Alabama coke trade is rapidly extending with the development and general expansion of the manufacturing interest. The drop in the price of iron some time ago reduced the consumption to a certain degree, but furnaces are all in operation now, with excellent prospects for a good trade.

THE Pennsylvania Coal & Mining Co., to which a charter has just been granted at Philippi, W. Va., proposes opening coal mines along the Tygarts Valley and Baltimore & Ohio Railroads. The company owns 2,000 acres of land and all franchises for coal, oil, gas, etc. G. W. Gall, Jr., of Philippi, and A. B. Brown, of Pittsburgh, Pa., are among the incorporators.

A CARGO of 1,320 tons of coal from the Alabama & Tennessee Coal Co. was taken at Pensacola, Fla., by the steamer Alabama and is now being unloaded at the coal elevator at Belasco, Texas.

SEVERAL new coal mines are being developed near Norton, Va. One of them is situated near the town limits and is being worked by a small force of men. The vein is said to be about eight or ten feet thick and several miles in length and to make fine coking coal.

THE Huntington (Ark.) correspondent of the *Arkansas Gazette* states that an eggette coal plant to cost about \$25,000 is now under construction in that city.

## RAILROAD NEWS.

[A complete record of all new railroad building in the South will be found in the Construction Department, on pages 39 and 40.]

## The News of Wall Street.

OFFICE OF MANUFACTURERS' RECORD,  
No. 126 Liberty Street,  
New York, August 10.

The most serious and important movement in the Richmond Terminal matter has developed within a week by the report of the Strong committee of the stockholders. This committee has handled the situation without gloves and almost without recognizing the law of libel, though, as for that, there is little likelihood of that sort of litigation coming in to complicate matters. That these gentlemen spoke the truth when they said that the Richmond Terminal stockholders stood in immediate danger of losing the last penny of present worth of their shares, and of forfeiting their equities in the railway properties which make up their assets; that their very directors were alienating these assets; that those to whom their interests were intrusted were "thwarting" a reorganization long ago pronounced feasible by that greatest of railway financial experts—Pierpont Morgan. All these facts were brought out in the baldest and boldest kind of language. That these sentiments found cordial approval is shown by the promptness with which the recommendations of the committee are being put into operation. The directors themselves will put no obstacle in the way of a meeting of stockholders and the interest represented in the work. Strong meetings will have their say in the coming Richmond proceedings as to the receivership, with a view to preserving their equities in the properties involved. A board of directors controlled by no clique, but by all the investors, is the first desideratum, and the stockholders' meeting will be asked to replace the present directors at once by such a body. Then the equitable rights of the holders of Richmond Terminal stock should prevail in obtaining properly authorized permanent receivers for the properties which they controlled, should prevail in impending court proceedings. It is certain that the interests of Richmond Terminal have suffered from inadequate representation of their equities in the courts. These things having been accomplished, it should be a much lighter task to bind together the properties comprising a railway system of the greatest importance to the development of the Gulf and coast States of the South.

We are taking here some interest in the indications that persons are at work to divert to the South immigration of a desirable quality not only from Ellis Island, but from the settled communities of the Northeastern States. I may venture the opinion that one drawback to investment in Southern enterprises has hitherto been an uncertainty of capital as to the possibility of finding competent labor at hand for employment should it undertake the various industrial schemes so certain of panning out that are almost daily presented to it from this wonderfully rich and productive territory. Moreover, many skilled workmen have been dissuaded from casting in their lot with the New South by the failure of many boom towns which established manufacturing plants of various kinds merely for the purpose of selling lots. Men take wives and families to such places as I have in mind often at great expense and sacrificing a surely comfortable position for something which promises grander things. The sanguine projectors of the boom town suddenly find that they have undertaken to do too much in too short of time, and the town fails. The workmen find themselves out of a job, and come back to New York, Pennsylvania, New England and Ohio cursing the whole South. I might multiply instances of this

evil if it were worth the while, but the fact remains.

Now this is not because these Southern "boom" towns have not some solid advantages, such as those of location near mineral or timber or other natural resources, or of convenience to a ready market for their products, or of other conditions on which towns and their inhabitants thrive and grow. It is the unsound financing of their projectors, who promise intending investors more than they can themselves perform. They virtually agree to develop a city in half an hour and people it with contented workmen. They dwell more on what they are going to do than what they can do or have done. Too often they care more for selling lots than for conservative building up of a solid community founded on a present condition of prosperity, and have only in sight the possibilities. I do not call these men swindlers; they are rather "Colonel Sellerses," seeing immediate realization of what it takes time, capital, indomitable energy and clear perception of the financial requirements of so great a scheme as the building up of a great country to perform, not by bluster and oversanguineness, but by steady up-hill work.

Perhaps I have drawn a gloomy picture. It is, I believe, now a picture that will rapidly fade. I think that now the kind of work in the South has been undertaken which will make towards success, being rightly undertaken, rightly directed and rightly carried out. Best of all, I believe this fact is becoming more and more borne in upon the minds of those who have money to put into profitable undertakings and who found in this place the centre for them to meet opportunities for such investments. There is no reason why many of the idle towns of the New South, stagnant because of the over-activity of these founders, should not yet hum with activity greater than these projectors ever dreamed of.

## That Richmond Terminal Letter.

The new committee on the reorganization of the Richmond Terminal affairs, composed of Thompson Dean, Albert B. Boardman and Charles P. Huntington, have summed up the condition of affairs in a concise and somewhat caustic manner. In opening the letter they say to the stockholders:

Prompt and concerted action on your part is needed to prevent the disintegration of the Richmond Terminal system. On August 1 your company defaulted on the interest then due on its 6 per cent. collateral trust bonds, and no provision has been made for the payment of interest on its 5 per cent. collateral trust bonds maturing on September 1. At the latter date the debt of your company, maturing by virtue of these defaults, will exceed \$16,500,000. Unless this indebtedness is paid or funded under some plan of reorganization, your property, including a majority of the stocks of the Richmond & Danville Railroad Co., the East Tennessee, Virginia & Georgia Railroad Co. and the Georgia Central Railroad Co., will be sold under foreclosure, your equities in these properties will be destroyed and your own stock will become worthless. These results can only be prevented by prompt and united action on your part for self-protection.

Referring to the condition of the company, this committee states that "at the last annual report, November 30, 1891, there was no floating debt, but on the contrary had in the treasury \$218,634.09 in cash, and securities unpledged to the par value of \$14,310,013.62, and of market value of over \$3,000,000. This report showed also that the gross earnings exceeded \$43,800,000, and net earnings \$13,900,000, or \$1,400 net per mile. Upon this basis the system earned 5 per cent. on a valuation of \$28,000 per mile, while the market price of all the securities of constituent companies and Terminal stock is only about \$21,000 per mile. This difference of \$7,000 per mile on 9,000 miles of railroad, amounting to \$63,000,000, together with any additional prospective values, is

the interest you are called upon to protect." They further say: "The effort to create the impression that the Terminal company is responsible for the embarrassment of the Richmond & Danville, East Tennessee, Virginia & Georgia and Georgia Central is unjustifiable. The fact is that the Terminal company is embarrassed by the difficulties of these roads, and its treasury has been stripped bare to aid the Richmond & Danville."

In regard to efforts at reorganization, the letter states that at the annual meeting in 1891 a temporary board of directors was elected with the express understanding that they would co-operate with a committee composed of Messrs. Norton, Salomon, Schiff, Olcott, Fairchild and Fitzgerald, who had consented to carefully investigate affairs and aid in readjusting them. These directors declined to co-operate with these gentlemen, and the Norton committee was driven from the field. Shortly afterward a new committee was formed with Mr. Olcott as chairman, but their plan was not received with approval and they also retired.

The failure of the plan advocated by the Olcott committee was followed by a request from over fifty large banking-houses to Drexel, Morgan & Co. to examine the properties with a view to preparing a plan for reorganization. This was complied with, and while the investigation was going on the Richmond & Danville and East Tennessee, Virginia & Georgia systems were placed in the hands of a receiver. Before doing this the quick assets of the Terminal company were loaned to the Richmond & Danville, and yet your company has confessed judgment in favor of the Richmond & Danville for \$181,906.03, in favor of William P. Clyde for \$30,115, and in favor of John C. Maben for \$15,065. On the application of the parties to whom these judgments were conferred, a receiver for your company has been appointed, and one of the grounds alleged to justify this action is that your board of directors, which had not been called together in months, had practically abandoned its trust.

It thus appears that while the Richmond & Danville Railroad Co. was indebted to your company in a very large sum upon loans of your assets to that company, one of your officers confessed judgment in favor of the receivers of that company in order to put your company into the hands of a receiver. With assets which should be in your treasury amounting to about \$3,000,000 market value, your company stands a confessed bankrupt in favor of the party who is in possession of those assets.

On June 28, 1892, Messrs. Drexel, Morgan & Co. addressed to certain security holders of your company a letter dated on that day, in which they state that after "a careful investigation of the affairs of the Richmond & West Point Terminal Railway & Warehouse Co. and its allied corporations," a reorganization is feasible on a basis of equity to all concerned, but that they were "obliged reluctantly to decline" to proceed with said reorganization because of Mr. W. P. Clyde, at whose instance receivers were appointed for the Richmond & Danville Railroad Co.

Your company is now in the hands of a receiver. Each of the railroad systems in which your company is a stockholder is now in the hands of a receiver. Important decisions denying your right to vote on stock you hold have been rendered. Your directors have not met in months. Every attempt to reorganize your properties has been thwarted. Your assets have been loaned to the Richmond & Danville Railroad Co., of which Mr. Clyde is now in control. He declines to support Messrs. Drexel, Morgan & Co. in their efforts to protect the interests of all concerned by a reorganization upon an equitable basis, and one of your own officers has confessed judgment in favor of the Danville receivers in order to put your company in the hands of a receiver.

In view of this condition of affairs it seems to us plain that nothing but prompt and concerted action on your part can save your stock from destruction. We believe that if you unite and act vigorously you can save your property. We respectfully make the following recommendations:

First—That you immediately call a general meeting of stockholders at the principal office of your company at Richmond, Va., to consider the condition in which your company is placed and to elect a board of directors who will command public confidence, and who will see that your interests are properly represented in the vitally im-

portant litigations now pending. Under the Virginia law such a meeting can be called by holders of one-tenth of the stock of your company on thirty days' notice.

Second—That prompt steps be taken to secure the appointment of permanent receivers who will be independent of all cliques and factions, and who will represent all classes of indebtedness.

Third—That united action of all security holders be taken to remove the obstacles now in the way of a comprehensive and equitable plan of reorganization.

Fourth—That a committee be appointed to receive the proxies of the stockholders for the purpose of representing them at such meeting and electing a board of directors who will carry out the policy herein stated.

All holders of stock and securities of the Richmond & West Point Terminal Railway & Warehouse Co. and its constituent companies who are in sympathy with the objects above set forth are requested to communicate with the committee at the office of Tracy, Boardman & Platt, Mills Building, 35 Wall street, New York city.

Dated New York, August 4, 1892.

Thompson Dean, Albert B. Boardman, Charles P. Huntington, committee.

Since this report was received petitions have been circulated in Wall street calling for a meeting of the stockholders in Richmond and the appointment of a new board of directors.

## A Baltimore View of Richmond Terminal.

In their circular letter of August 6 Hambleton & Co., of Baltimore, make some pretty pointed remarks upon the Richmond Terminal situation. Commenting upon C. P. Huntington's statement to the Terminal bond and stockholders, they say:

"It is evident that there is a nice little family quarrel on hand, and that before this Terminal business is settled, metaphorically speaking, the fur will fly.

"It is to be hoped, for the sake of the innocent holders of the so-called Terminal securities, that a reorganization of the Terminal company itself may be effected. So far as the professional manipulators and speculators are concerned, they do not deserve much sympathy. The Terminal company was an inflated speculative bubble. It is now a collapsed speculative wreck. So far as the Terminal people are concerned, there is only one chance for their escape from financial destruction, and that is by assessing themselves to an extent sufficient to pay off all floating debts and pressing obligations, and by accepting in exchange for their Terminal bonds obligations which will not entail a fixed charge upon the revenues of the company.

"It will be entirely useless to formulate any plan of reorganization which shall provide for the recognition of any of the Terminal securities upon a basis which would require a sacrifice of any prior claim security holders for the benefit of the Terminal bonds. This was attempted in the proposition which so signally failed.

"The Terminal people must save themselves if they are to be saved at all. There are now too many doctors prescribing for the patient, or rather not doing anything but losing valuable time, and until the conflicting interests are harmonized and the different factions stop quarreling there is not much hope of an improvement in the situation. At present the several disputants are fighting to control the permanent receiver to be appointed on the 16th instant, and all efforts are being turned in this direction. In the meantime the Richmond & Danville, the East Tennessee, Virginia & Georgia and the Central of Georgia are getting further and further apart. If these systems of roads are permanently separated and each is reorganized upon an individual basis, good-bye to the Terminal company and its securities.

"Nearly sixty days have been wasted in wrangling, and yet the matter is susceptible of an early solution if taken hold of with energy and in a spirit of fairness towards all interests. It is absurd for a dozen different committees to be kept in existence only for the purpose of watching



each other and striving to counteract any move either may make. First of all, put a stop to this nonsense.

"Let the representatives of the Terminal company, the Richmond & Danville, the Central of Georgia, the East Tennessee, Virginia & Georgia companies, and of the Richmond & Danville underlying bondholders, each appoint one member of a committee of conference, whose duty it shall be first to find out definitely and positively the financial and physical condition, collectively and individually, of each and every road in the Terminal system, liabilities and assets, revenues and fixed charges. This will give a basis upon which to start a scheme of reorganization, or it will prove conclusively that the system is bankrupt and that it must be disrupted. Find out first how matters stand, just as would be done in the case of any mercantile house or corporation which might be in financial difficulties.

"That this should be done is more important to the Terminal people than any one else. They must show that the Terminal company has some chance of being able in the future to produce a revenue on its securities, and that the company can give some kind of obligation which promises to possess some value, otherwise stockholders will not pay an assessment, as it would be throwing good money after bad. Secondly, let this conference committee of five suggest a basis of settlement and reorganization, if their investigations shall develop that a basis of reorganization of the Terminal company does exist.

"On the contrary, if it should appear that nothing remains upon which to reorganize the system, then let the disintegration come. Our people here at Baltimore are the only parties at interest who can afford to play a waiting game. We hold the divisional bonds and are the landlords. It makes no difference to us how long the New York factions keep up the fight so long as our rent (interest on divisional, endorsed and guaranteed bonds) is promptly paid, but for the good of the investing public and in the interest of the South we should like to see this Richmond Terminal difficulty settled, and are ready to co-operate in any reasonable plan, or, on the contrary, to take possession of our property should all plans of reorganization fail."

#### Louisville & Nashville's Proposed Purchase.

The negotiations which have been pending for a year or more for the purchase of the Louisville, St. Louis & Texas Railroad by the Louisville & Nashville are said to be only in a state of suspension and may be resumed at any time. It is understood that the figures at which the property is now held are higher than those first named. The purchase was, it is stated, approved of by August Belmont and other Louisville officials after an inspection of the property, but was postponed by the opposition of certain directors. The Louisville, St. Louis & Texas runs from Henderson, Ky., to West Point, Ky., twenty-one miles from Louisville, which city it reaches by trackage over the Chesapeake & Ohio. It is calculated that by securing this line the Louisville & Nashville would shorten its route to St. Louis 119 miles, and with existing traffic arrangements with the Norfolk & Western would fill out a direct route to tidewater. The road was built originally to develop coal fields, and derives considerable revenue from that business, but which is as yet not fully developed. It also enjoys a healthy passenger and freight traffic. The following details furnish an idea as to its financial condition: Stock outstanding, \$3,000,000; first mortgage 6 per cent bonds, \$2,440,000, and \$250,000 second mortgage 6s. The surplus last year over fixed charges was \$17,522, and this year will be about \$84,000, of

which about \$5,000 are applied monthly to the payment of car trust notes. There are \$220,000 of these outstanding. The business of the road evidences a decided increase, the gross earnings the last fiscal year being \$429,415 and for this year \$556,751. It has been reported that Louisville has bid 30 for the stock of the company. A recent sale was made at 21½.

#### The Macon & Northern Entanglement.

The affairs of the Macon & Northern Railroad are in quite a muddle. This road was jointly leased by the Central Railroad of Georgia and the Richmond & Danville, and has, owing to the complications which rose between them, been operated by a board jointly selected by the two roads. When it became evident that the road would default in its interest, steps were taken towards placing it in the hands of a receiver, and in this move the Richmond & Danville people came out ahead. They anticipated the default and secured the appointment of Jephtha Rucker, of Athens, Ga., as receiver, while the attorneys for other complainants seemed to be awaiting the actual failure to pay interest. The petition for the receivership set forth that the road is 105 miles long; that on June 15, 1891, it made a mortgage to the Mercantile Trust Co. of New York, as trustee, for \$2,200,000 to secure an issue of 4½ per cent. bonds to that amount. The lessees of the road guaranteed the interest—\$99,000—and the petition stated that neither the R. & D. or the Central had any funds to meet this interest and did not intend paying it. The legality of its operation under the lessee board was questioned and the road declared to be hopelessly insolvent. Edward Van Name, of New York, who owns \$12,000 of Macon & Northern bonds, filed the application. The Central Railroad people contend that the facts had not been properly represented to Judge Newman, who made the appointment, otherwise the petition would not have been granted. J. F. Hanson, who was one of the board of control on part of the Central, was named as a joint receiver, but declined to serve because he was an official of Judge Speer's court, which appointed the Central's receivers, and could not accept a contrary appointment from another court. Another hearing of the case will be held on August 22, and in the meantime the Central will refuse the road entrance into Macon over its tracks, which it heretofore used for a distance of over four miles, and E. W. Burke, the treasurer, as well as President Harris and Mr. Hanson, of the board of control, and agents along the road decline to recognize Receiver Rucker's authority.

#### Terminal Difficulties in Chattanooga.

The Richmond & Danville appears disposed to harass the Central Railroad of Georgia in every possible manner. The Central, since it first reached Chattanooga, has had terminal arrangements with the Cincinnati Southern, but last week these relations were suddenly ended by that road refusing to allow the Central to use its facilities any longer, and the Central found itself literally thrown out in the street without either a terminal or offices. The cause of this action is stated to be the refusal of the Central to pay the Cincinnati Southern the amount due by the Richmond & Danville for the use of its terminal while operating the Central. The Cincinnati Southern is leased by the East Tennessee, which, so to speak, is a partner of the Richmond & Danville, and although the money was due it by the latter, it endeavored to force the amount out of the Central, inspired, it is believed, by the R. & D. The Central has since made satisfactory

arrangements with the Nashville, Chattanooga & St. Louis for terminal facilities and offices. The affair will, however, be heard of again in the courts.

#### A Short Road to be Sold.

The holders of the first mortgage bonds of the Cheraw & Salisbury Railroad are taking steps to secure the foreclosure of their mortgage and a sale of the road. The road runs from Cheraw, S. C., to Wadesboro, N. C., a distance of 25 miles, and is operated by the Atlantic Coast Line. The first mortgage bonds amount to \$160,000, but no interest has been paid on them since 1886. The floating debt is \$50,000, capital stock \$599,000, and there is unpaid interest of \$26,000. The net income last year was \$9,184, which amount is said to be nearly three times any previous income in five years.

#### Atlanta & West Point.

At the annual meeting of the stockholders of the Atlanta & West Point Railroad Co., the following directors were elected for the ensuing year: C. H. Phinizy, of Augusta; W. B. Berry and H. C. Fisher, of Newnan; D. N. Speer, T. L. Langston and E. P. Chamberlin, of Atlanta; H. M. Comer, of Savannah. The road is controlled by the Central Railroad of Georgia and the Louisville & Nashville.

#### Railroad Receiverships in the South.

More than one-half of the railroad mileage of South Carolina is in the hands of receivers. The following is given as a list of the roads:

Asheville & Spartanburg.  
Atlanta & Charlotte Air Line.  
Columbia, Knoxville & Western.  
Three C's.  
Charleston, Sumter & Northern.  
Charlotte, Columbia & Augusta.  
Cheraw & Chester.  
Chester & Lenoir.  
Columbia & Greenville.  
Laurens Railroad.  
Port Royal & Augusta.  
Port Royal & Western Carolina.  
South Carolina Railway.  
Spartanburg, Union & Columbia.  
Their total mileage is 1,487½, and the mileage of the State 2,358½ miles.

#### Consolidation with the Huntington System.

The Owensboro, Falls of Rough & Green River Railroad, which is now being built to a connection with the Newport News & Mississippi Valley at Horse Branch, Ky., will, on January 1, 1893, become part of the Huntington system and be operated by the Newport News & Mississippi Valley Co. When the extension is completed the road will be forty-five miles long and run from Owensboro, Ky., on the Ohio river, to Horse Branch, Ky. It is thought that the railroad projected from Indianapolis, Ind., to Chattanooga, Tenn., will use these forty-five miles as part of its line southeast from the Ohio river.

#### Bondholders to Protect Their Interests.

The bondholders of the Richmond, Nicholasville, Irvine & Beattyville Railroad recently held a meeting for the purpose of considering the best means of protecting their interests, and a committee was appointed to formulate a plan either for the completion of the road or for its reorganization at the earliest date possible. The talk of an English syndicate being prepared to build the road from Beattyville to Cumberland is pronounced by the receiver, John McLeod, of Louisville, to be a reportorial fantasy.

#### Railroad Notes.

In the trial of the suits against the Texas railroad commission it developed that had the roads received the same rates as those in force prior to the commission's action the increase of revenue of the Texas & Pacific would have been more than \$300,000 for the year, and the International & Great Northern upwards of \$200,000.

ST. LOUIS & SOUTHWESTERN has gross earnings of \$338,800 for July, an increase of \$16,300 over the same month of last year, and over \$13,000 of it was made in the fourth week. Texas & Pacific gross earnings for July are \$424,080, a decrease of \$27,217, and Louisville & Nashville \$1,814,430, a decrease of \$52,361.

ATTENTION is being devoted by the East Tennessee receivers to the road-bed of that line, and it is contemplated to so improve its condition as to enable the shortening of the passenger and freight schedules.

AN enterprise of much moment to the lumber and iron mining interests of Buckingham county, Va., is the extension of the Buckingham branch of the Chesapeake & Ohio, now under way from its terminus at Arvon to Rosney, sixteen and three-quarter miles south. This county, although skirted on two sides by the Chesapeake & Ohio, has no railroad reaching the interior, the Buckingham branch running only about four miles from the main line. The Rosney Iron & Lumber Co. has been active in arranging for this extension and took the contract for the work, which it sub-let to C. D. Langhorne, of Richmond.

THE West Virginia Central & Pittsburg Co., at the recent annual meeting of stockholders, elected the following officers: H. G. Davis, president; S. B. Elkins, vice-president; board of directors, H. G. Davis, S. B. Elkins, James G. Blaine, W. W. Taylor, John A. Hambleton, T. B. Davis and R. C. Kerens. E. W. S. Moore was elected secretary and treasurer.

THE stockholders of the Piedmont & Cumberland Railway, which is operated by the West Virginia Central, elected R. C. Kerens, president; E. W. S. Moore, secretary and treasurer, and the following board of directors: H. G. Davis, S. B. Elkins, T. B. Davis, R. C. Kerens, G. W. Harrison, H. G. Buxton and E. W. S. Moore.

BASIL DUKE, attorney for the Louisville & Nashville Railroad, states his company will have to pay \$450,000 taxes under the Kentucky new revenue bill, as against \$155,000 under the old system, if it becomes a law and holds good in the courts. He says, however, he is sure the provision taxing the franchises of roads will not be sustained by the courts, as it taxes \$4,000,000 of capital stock of the Louisville & Nashville as franchise, whereas the Queen & Crescent has no capital stock, and escapes with only its tangible property taxed. The Queen & Crescent was built by the city of Cincinnati, and has no capital stock. The city issued its bonds for the cost of the road.

THE traffic contract existing between the Newport News & Mississippi Valley and the Louisville, New Orleans & Texas will be abrogated on September 1. This agreement since the acquisition of the latter road by the Illinois Central is no longer required.

THE dispute over the receivership for the Jacksonville, Tampa & Key West has been settled by the appointment of John Mason Young, of New York, as receiver.

THE extension of the Cincinnati Southern from Chattanooga to Savannah, a distance of about 275 miles, is talked of, and it is learned that officials of that company have been investigating as to the probable support that would be accorded such a project by the people of Savannah.

## Manufacturers' Record.

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BALTIMORE, AUGUST 12, 1892.

### Notice to Advertisers.

The last forms containing advertisements  
are closed on Tuesday afternoon. New adver-  
tisements or changes should be received not  
later than Tuesday noon to ensure attention  
in the issue bearing date of the following  
Friday. Reading matter should be in our  
office on Wednesday, although late news can  
be received early Thursday morning.

PHOSPHORUS has always been the bane  
of Southern iron ores, and we desire to  
call the attention of iron men and scien-  
tists to a simple solution of the problem of  
how to find non phosphoric ores which is  
advanced by one of our correspondents.  
He writes: "The magnetic iron is near the  
railroad, but have not seen it. It is said  
to be fair, and must be free from phos-  
phorus owing to the altitude."

### Congressional Parsimony To- wards the World's Fair.

The two weeks of wrangle in Congress  
over the appropriation of \$5,000,000 to the  
World's Fair has resulted in a doubtful  
advantage to the exposition. Congress  
finally decided to appropriate one-half the  
sum asked for, but this \$2,500,000 is con-  
ditioned upon the closing of the exposition  
on Sundays. According to the estimates  
of the World's Fair people, the closing of  
the show on Sunday means a reduction of  
not less than \$2,500,000 in the gross reve-  
nues; so it seems that there is practically  
nothing in this apparent munificence. It  
does not seem that the exposition can  
afford to accept this appropriation subject  
to the conditions imposed by Congress.  
The opposition to the opening of the fair  
grounds and buildings on the Sabbath un-  
doubtedly had its origin in the minds of  
worthy and conscientious men whose  
course has been consistent with their  
honest convictions, but the circumstances  
under which this feature is introduced in  
the final act of Congress reduce it to a  
mere political subterfuge designed to catch  
votes from honest and innocent people.  
It is not likely that the exposition will  
remain closed on the Sabbath, and viewing  
the matter from all points, it appears that  
there would be a better moral influence in  
an open exposition, devoid of any objec-

tionable features, than in the hundreds of  
places of evil that would be opened wide  
to the hundreds of thousands of residents  
and visitors on Sunday in Chicago next  
summer.

The action of Congress in the matter of  
this appropriation may aptly be likened to  
a man who joins a friend in preparing an  
entertainment, invites guests unsparingly,  
but shrugs his shoulders and walks away  
when asked to settle his share of the bill.  
Our government has officially recognized  
the World's Columbian Exposition, has in-  
vited other nations to participate in the  
great event and has unhesitatingly dictated  
how the work shall be carried on, but when  
asked to pay its share disclaimed any in-  
debtedness. This protracted wrangle in  
Congress and the bitter things that have  
been uttered against the exposition, en-  
tirely without cause, have not been un-  
noticed abroad, but have placed our govern-  
ment in an unpleasant position in the eyes  
of foreign nations. Having committed  
itself so far to the enterprise, our govern-  
ment will be disgraced by any failure or  
shortcoming in the World's Fair. But Con-  
gress had no thought for this, nor for any-  
thing else save possible effect upon the  
votes that will be cast at next fall's election.

The suggestion of the Chicago *Inter-  
Ocean* that the 5,000,000 souvenir half-dol-  
lars shall be sold for one dollar each is an  
ingenious plan for supplying the deficiency  
and it is not impracticable. Chicago may  
be depended upon to carry to completion  
the enterprise that has been undertaken,  
despite the deterrent influence of a narrow-  
visioned Congress.

### Flax in the United States.

Of late years the cultivation of flax for  
either fibre or seed has received practically  
no attention in the South, where long ago  
it was a prominent industry. In 1849  
Kentucky produced 2,100,116 pounds of  
flax fibre and 75,801 bushels of seed. In  
1869 this had decreased to 237,268 pounds  
fibre and 14,657 bushels seed; in 1879 to  
48,491 pounds fibre and 2,192 bushels seed;  
in 1889 to 12,295 pounds fibre and 1,321  
bushels seed. Virginia produced 1,000,450  
pounds of fibre and 52,318 bushels seed in  
1849, 487,808 pounds fibre in 1859, 130,-  
750 pounds in 1869, 66,264 pounds in 1879,  
and 27,133 pounds in 1889. Tennessee  
produced 368,131 pounds in 1879, 164,294  
pounds in 1859, 80,930 pounds in 1869,  
19,601 pounds in 1879, and but 2,664  
pounds in 1889.

The total production for the United  
States in 1849 was 7,707,676 pounds fibre  
and 562,312 bushels seed; in 1859 it was  
4,720,145 pounds fibre and 566,867 bushels  
seed; in 1869, 27,133,034 pounds fibre  
and 1,730,444 bushels seed, Ohio producing  
in this year 17,880,624 pounds of fibre and  
631,894 bushels seed; in 1879 the total  
production was 1,565,546 pounds fibre and  
7,170,950 bushels seed, and in 1889, 241,389  
pounds fibre and 10,250,410 bushels seed,  
the total value of all being \$10,436,228.  
To this amount the South contributed as  
follows:

Arkansas.....	\$ 14
Kentucky.....	12,295
North Carolina.....	3,617
Tennessee.....	2,664
Virginia.....	27,133
West Virginia.....	4,018
Total .....	\$ 49,751

During the past two years the Depart-  
ment of Agriculture has been devoting  
considerable attention to the possibility of  
flax culture for the fibre, and while the  
report from some of the experimental  
stations are not encouraging so far as the

question of comparative cost and value is  
concerned, those from other and better  
located stations show that with suitable  
ground the plant can be made profitable.

Lee county, Va., is the only locality in  
the South where there is any considerable  
flax industry, and this is but a remnant of  
the old household linen manufacture of  
two generations ago. The flax is raised  
by the farmers, whose families make it  
into linen of excellent quality by the use  
of primitive methods and machinery, the  
entire product being for home consumption.

Throughout Europe there has been a  
falling off in the flax industry, and Cana-  
dians, who are large growers, are looking  
forward to a large European market for  
their flax. The United States does not  
even grow enough to supply its flax-twine  
mills. When it is remembered that we  
import each year nearly \$16,000,000 in flax,  
of which about \$2,000,000 is raw flax fibre  
and \$14,000,000 brown linens and coarser  
fabrics, it will be seen how important the  
growth of the plant is to us.

### A National Physical Labo- ratory.

In an article in the *Pedagogical Seminary*,  
of which we print an abstract in our pres-  
ent issue, Dr. Arthur G. Webster presents  
a forcible argument in behalf of a national  
physical laboratory, the chief functions of  
which are assumed to be the establishment  
of standard units of measurement and the  
testing of scientific instruments and the  
conduct of intricate research in those  
branches of physical science that have a  
more or less direct bearing on the two  
first-mentioned objects. To the scientist  
the necessity for such a laboratory appeals  
without argument, and to the man who is  
familiar with only practically applied  
science there appear numerous troublesome  
problems which such an institution would  
either solve or remove. The arguments  
which Dr. Webster has advanced, and the  
illustrations by which he has emphasized  
them, are more interesting to us in their  
strictly practical aspects, for it is from this  
point of view that we naturally regard the  
subject. The lack of standards, and the  
confusion and uncertainty among those  
that exist in electrical science, in me-  
chanics, in chemistry and in metallurgy  
are a constant annoyance alike to the  
professional man who recognizes the  
deficiencies without being able to supply  
them, and to the business man who knows  
them only in their effect upon his sensitive  
purse.

Some of our scientific societies and tech-  
nical associations have undertaken the  
determination of standards to meet the  
requirements of certain branches of applied  
science, but all that has been accomplished  
in this direction has been done with great  
difficulty, and the results obtained have not  
been all that could be desired. The re-  
quirements for the successful conduct of  
such work as this are brains, money and  
time, and there is surely no lack of these  
essentials in this country. The laborato-  
ries of some of our scientific schools offer  
facilities for portions of the work that  
would naturally fall within the scope of  
such an institution as outlined by Dr.  
Webster, and the faculties of these same  
schools undoubtedly embrace scientists  
amply qualified for such work, but the  
duties of their offices absorb their time,  
and leave but little opportunity for other  
matters.

The establishment and maintenance of  
a physical laboratory of such a special

character is more properly a government  
function, although we are apt to look upon  
such suggestions as savoring too strongly of  
paternalism for this democratic nation.  
Congress shows little favor and scant con-  
sideration for any proposition to extend  
government aid to the cause of science.  
The appropriations that have just been  
made for the scientific departments of the  
public service, the Coast and Geodetic Sur-  
vey, the Geological Survey, and the Smith-  
sonian Institute, were subjected to the  
closest scrutiny and a most ruthless paring.  
In a measure this was justified by past  
extravagance in certain branches, noto-  
riously in the Geological Survey, but even  
a modest appropriation for a worthy work  
of science can secure only scant consid-  
eration; for instance, the recent appropria-  
tion of a few thousand dollars which has  
been given for the continuance of the  
timber tests under the direction of the  
Forestry Division of the Department of  
Agriculture.

A national physical laboratory like that  
in Berlin, which Dr. Webster describes,  
would be of incalculable value to the  
cause of science in this country, and public  
funds devoted to such a purpose would be  
well spent; but we fear that it will be  
many years before Congress can be brought  
to appreciate the importance and value of  
such an enterprise. It is too pre-eminently  
devoid of any feature that might be used  
for political effect.

### The Mississippi Levees.

Two writers in the current number of  
the *Engineering Magazine* strongly endorse  
the levee system and severely criticize the  
article written by "A Southern Engineer"  
which appeared in the June issue of that  
magazine. Considering Mr. Coppee's  
article first, though not in the order in  
which the two are presented, his statement  
as to the mean velocity and rise of the  
river may be correct for an average of the  
entire length, but the Mississippi does not  
present a problem which can be settled on  
averages. It is a series of more or less  
local conditions, each of which must be  
considered by itself and in relation to the  
whole. At points where the river during  
extreme high water is spread over large  
tracts of country the velocity may not ex-  
ceed six and one half feet per second, but  
in other places, where the enormous volume  
of water has a more limited channel, a  
velocity of nine and one-half feet per sec-  
ond has been measured, and at the same  
point a velocity of five feet per second was  
measured at low water stage. It may  
safely be said that the velocity of the river  
at high water stage varies between Cairo  
and New Orleans from five to ten feet per  
second, and seven to eight feet is by no  
means rare.

It is true that a rise of two feet in  
twenty-four hours would not add to the  
apparent velocity of the river, but when  
the water is over the banks and moving  
across almost level country, the velocity  
there is clearly appreciable, so great as to  
require extremely rapid movements on the  
part of a family desiring to get out of  
reach of the flood wave. The reference to  
the unusually heavy rains prevailing in the  
upper valleys of the Mississippi, Mis-  
souri and Arkansas rivers, and the slight effect  
noticed at Helena and Arkansas City,  
loses its point when it is remembered that  
at that time not only was the Mississippi at  
its highest, but it was spread over thous-  
ands of acres of land, which acted as a  
reservoir, and this alone prevented the



complete overflow of the territory lying behind the levees of the lower river. If the entire volume of water from these three rivers had been confined by levees and poured into the Mississippi, there is not the least doubt that the lower country would have been entirely overflowed. As it is, the country on each side of the river from Cairo to Memphis forms a reservoir, every stream, river and bayou in which aids in just so much in retaining and afterward delivering the enormous volume of water poured into it.

In regard to levees causing either the raising or lowering of the bed of the river, this is a matter depending somewhat upon local conditions, the width of the river, the bends and general nature of the channel. In some places it is undoubtedly true that the levees, by confining the river to a certain channel, increase its velocity and therefore its scouring action, but further on a bend or the increased width between levees may cause the deposition of a larger proportion of silt in that locality than would otherwise have been the case.

The silt which causes shoaling of the channel is more largely due to the continual movement on the bottom of the river than any other cause. Sand before a heavy wind will have an onward movement in a succession of waves, and the same thing occurs in the Mississippi bottom. The heavier particles do not float, but are carried on in these progressive waves, and upon meeting an eddy or return current caused by a bend or obstruction, they build up and are added to by continual deposits of the heavier particles carried in suspension by the water itself. When these become large enough to interfere with the current, either the latter will be deflected, if not strong, or they will be washed away and carried further down, repeating the formation of bars and shallow places. From Cairo to the Gulf there is a continual crawling movement of the bottom of the river, and it is evident that the greater velocity attained by the current the more rapid this movement will be.

To confine the river within levees means to increase its velocity, but with increased velocity comes greater powers of erosion upon the banks. Such a volume of water impinging upon an earthen bank or levee with a velocity of even five feet per second will wash it away in a short time, and if the entire river from Cairo to New Orleans were protected by levees, it would be quite as necessary that they be constructed of such material as would not wash away as it would be to have them of sufficient strength and height to resist sudden rises which would come each time one of the large tributaries was flooded.

If the territory which now acts as a safety reserve basin or reservoir to protect the lower country from sudden rises is so serviceable and effective, it is evident that the same purpose would be accomplished if the water flowing into these basins should be carried away by other channels than the main river. In this respect the outlet theory is both practicable and wise; it would result in keeping these basins—or rather this large stretch of low country—drained, and during flood season would reduce both the height and duration of overflow.

Mr. Coppee quotes the opinion of General Comstock as to the river Po and shows thereby that the bottom of that river has not risen materially since levees were put in. From General Wilson he quotes an opinion as to the Yellow river. In the former case figures are given since 1807,

and in the latter merely an opinion without other proofs than limited observation. The fact is that the bottoms of these rivers are almost, if not quite, on a level with the surrounding country and that they have been leveed for centuries. Whether the levees were the cause of the bottoms rising to their present position or whether they would have come as high had no levees been constructed it is impossible to say, because there are no data to go by other than tradition or the interesting though unreliable method of reasoning backward from present conditions.

Mr. Dutton tries to demolish the cut-off idea and prove a theory of his own, but in developing it he gives the strongest reasons why a cut-off or straightening of the channel should be done. His idea is to commence at the present outlet and build up to Natchez strong and substantial levees, and by them reduce the width of the river and increase its scouring action. With a certain slope through the delta seven times as great as that up to Natchez this scouring action would gradually wear the whole to a regular slope, thus lowering the bottom of the river and giving it greatly increased capacity. Such a reduction of the bottom would gradually extend up the river to Cairo and reduce the level there. This is precisely the result which it is desirable to reach, but to do it will require two important issues which Mr. Dutton has failed to provide. First, the levees and banks must be so protected that they will not wash, and to do this at a minimum cost will require that the river be so straightened as to prevent the current from striking directly upon the bank as it does in rounding a bend. Should these be done Mr. Dutton's plan might be feasible, but with the narrow and straighter channel would come greater velocity of the current and, as already stated, its greater power against banks or levees.

Carefully considering the opinions which have been freely expressed by many able engineers on this important subject, it seems that what is required is a combination of the levee and outlet systems rather than either one singly—the levees to protect property and aid in giving increased scouring action to the river, and the outlets to prevent the sudden delivery of large volumes of water from a flooded tributary. Where these outlets shall be placed or how constructed is a matter for the engineer to solve.

#### GENERAL NOTES.

##### Brief Mention of Various Matters of Current Interest.

THE stockholders of the Eastern Carolina Piscatorial Association held their first annual meeting at Wilmington, N. C., recently and elected E. Porter, president; W. A. Riach, vice-president, and Isaac Bates, secretary and treasurer. This association owns 1,000 acres of fine oyster ground, and has planted 59,522 bushels of oysters in the past year. It is proposed to plant many more next spring. Besides the oyster ground, 305 acres of fine upland are owned, and it is intended to start a small town there. All of the ground is paid for and the company has no debts.

THE joint committee of the general assembly appointed to examine into and report to the next meeting of the body the real value and the assessed value of the mineral lands of the State will meet at Covington on the 15th of this month, instead of at Luray, as previously announced. Alleghany, Bath, Craig, Botetourt, Roanoke, Rockbridge, Augusta, Page,

Wise, Dickerson, Russell, Tazewell and Buchanan are among the counties that will be visited. The committee is constituted as follows: Mr. A. F. Withrow, of Bath, chairman; Mr. R. I. Anderson, of Pittsylvania; Mr. W. A. Fentress, of Portsmouth; Mr. M. P. Jackson, of Buchanan, and Mr. J. E. Mason, of King George. From the Senate—Mr. Henry Fairfax, of Fauquier; Mr. James W. Marshall, of Roanoke, and Mr. Conway R. Sands, of Richmond.

A YEAR ago Texas sent out two cars containing an exhibit of the many products of the State. In this time the exhibit has been through eighteen States, over twenty-three lines of railroad and traveled a distance of 19,000 miles. Nearly 2,000,000 people have passed through the cars and twenty-two tons of reading matter and maps have been distributed. The daily press has given the exhibit 280,000 lines of matter, 13,400 people have been induced to go to Texas and 400 emigrant agents have been secured in as many towns. This exhibit has received universal encouragement in all places in which it has been, and has probably done more actual good for the State than many times the same amount of money it cost if expended in other ways.

AT Raleigh, N. C., the board of aldermen have appropriated \$2,000 to be used October next in celebrating Raleigh's centennial. The management is in the hands of a committee of sixty gentlemen and twenty ladies, all prominent in business or society. Great public interest is taken in the success of the occasion.

SINCE 1884 Roanoke, Va., has expended \$162,000 in street improvements, \$150,000 in sewage, \$45,000 in schools, \$20,000 in public buildings, \$35,000 to the fire department and \$25,000 for overhead bridges at railroad crossings, a total of \$437,000, which, with other money appropriated but not yet used, will amount to over \$500,000.

THE property of the Natchez (Miss.) Water & Sewer Co. was recently sold at public outcry to satisfy the first mortgage bonds held by the Equitable Mortgage Co. of New York. Jas. L. Richardson, of New Orleans, purchased the property for \$126,000, the money to be paid in cash upon confirmation of sale by the chancery court, which convenes the first Monday in October.

RUDOLPH HERING has been engaged as consulting engineer, in connection with George C. Earl, resident engineer, in constructing the new sewage system for New Orleans. The work of topographical and hypsometrical surveying has begun. It is intended to make this the most efficient system of sewage which can be devised.

A DESPATCH from Nashville, Tenn., says: "The Cumberland Oil Co. at Eagle creek, Pickett county, near Birdstown, struck natural gas on July 28, which is flowing with a capacity of 1,000,000 cubic feet per day. The place where the well is located is far from communication. The roar made by the escaping gas can be heard for miles."

THE city of Meridian, Miss., has decided to make a topographical survey of the streets with a view of putting in a complete sewage system. A sewerage committee has been appointed and will employ an expert sanitary engineer to formulate a system and draw up specifications. N. M. Brandon, city engineer, will make the preliminary survey.

THE officers of the Georgia Southern Railroad have for some time been trying to get people along their line to cultivate tobacco. Recently some farmers have taken hold of it and about 250 acres are now under cultivation. Some of the tobacco has been cut and partially cured,

and is said to be excellent. Three large curing barns have been erected at Cycloneta.

A PLAN of reorganization and consolidation for the street railways of Lynchburg, promoted by Otey, Walker & Bowyer of that city, is meeting with favor.

#### Recent Publications.

GEOLOGICAL SURVEY OF TEXAS. Bulletin No. 2. A preliminary report on the soils and waters of the upper Rio Grande and Pecos valleys. By H. H. Harrington, professor of chemistry and mineralogy, Agricultural and Mechanical College of Texas. Published by the State, Austin, Texas.

Acting under the instructions of the State geologist, Professor Harrington has made a thorough examination upon the subject of this report. The question of irrigation is one of considerable importance in El Paso county, and the results of the examination show that the soils of the Rio Grande and Pecos valleys are equally fertile and only require a supply of water to render them highly productive. The analyses which are given of water and soil are most interesting, and the large proportion of alkalies as chlorides is particularly noticeable.

GEOGRAPHICAL SURVEY OF TEXAS. Bulletin No. 3. Reconnaissance of the Guadalupe mountains. By R. S. Tarr. Published by the State, Austin, Texas.

Mr. Tarr, acting under the instructions of the State geologist, examined the Guadalupe mountains for the purpose of determining the age, geological structure and relation to the strata east of the mountains, with particular reference to the artesian water supply of the plains and the prospects of the district for coal and other minerals. The age of the mountains is placed in the carboniferous period, and the stratigraphy and general character of the country fully described.

#### Change in Mining Schedule at Pocahontas.

The Southwest Virginia Improvement Co. has changed the schedule of prices for mining coal at Pocahontas so as to correspond with that paid by other companies in the region. Hitherto the miners have received the following rates:

Entries.....	\$1 05 per car.
Entry breaks.....	75 " " and \$2 00 per yard.
Turning rooms.....	75 " " 1 50 " "
Room breaks.....	75 " " 1 00 " "
Rooms.....	75 " "

Their cars average eighty cubic feet, while those of other operators in the region contain ninety-two cubic feet.

Commencing August 1 the following rates have been adopted:

Cars contain ninety-two cubic feet.

Entries.....	\$1 05 per car.
Entry breaks.....	1 05 " " No yardage.
Turning rooms.....	1 05 " "
Room breaks (narrow).....	1 05 " "
Room breaks (wide).....	75 " "
Rooms.....	75 " "

The miners laid off one day to consider the change and then went back to work.

#### Fort Payne Coal & Iron Co.

In the case of A. L. Layles et al., representing the minority bondholders, vs. The Fort Payne Coal & Iron Co., in the United States Circuit Court in Birmingham, Judge Bruce has granted petitioners' prayer for the appointment of a temporary receiver of defendant company. W. K. Sheldon is temporary receiver. He gives bond in the sum of \$10,000 and takes entire control of the properties. The defendants have been notified by a rule nisi to appear before court on the first Monday in September and show cause why Mr. Sheldon should not be made permanent receiver, or some one else be made such in his stead.

An injunction is granted restraining A. B. Green, A. J. Butler and Citizens' Bond & Trust Co. from disposing of any of the assets or properties of defendant company before the hearing of the case in September.

## LUMBER.

[For lumber market reports see pages 36 and 37. In the Construction Department, on pages 38 and 39, will be found a complete record of new mills and building operations in the South.]

### In the Memphis District.

[From our own Correspondent.]

MEMPHIS, TENN., August 8.

The general feeling here is one of expectancy for the fall business. Building and such matters are moving along with a fair degree of speed, considering the weather. The new Raleigh Electric Suburban Railroad is now running, and will add greatly to the facilities of new manufacturing plants in that direction. The bridge across Wolf river will be finished

but a small share of trouble from this cause. Negro labor may be slow, but it is willing and in abundance, and this is a great inducement for a manufacturer.

### The Duvinage Anchor Plate.

As a general rule beams and girders are set in a brick wall either with no tie to hold them or with an iron strap bolted to the side of the beam and passing through the wall to the outside, where it is fastened by means of a washer and nut. In case of a fire these beams will break, and the weight and shock always raise the bricks resting on the end of the beam, thereby loosening the wall at that point. Not infrequently they tear washer and nut through the wall, making a break which admits the fire to the adjoining building.

DUVINAGE'S SYSTEM  
FOR 2" TO 3" JOIST.  
WROUGHT IRON.



FIG. 1.

this month, and with the side-tracks promised by the Chesapeake & Ohio Railroad will make available a large tract of land on the Wolf river front. The Interstate Fair Association are doing a good work in the northeastern suburb in Chelsea by fitting up an attractive park of some forty acres.

The crop prospects are not so favorable as they were a week ago; this is particularly the case with cotton. At the same time there is no present reason for discouragement.

The Young Men's Business League have succeeded in getting C. T. Nelson & Co., of Columbus, Ohio, to locate a branch works here for making poplar posts, pillars, etc. Heretofore this firm has shipped rough lumber from here to their Columbus

To remedy this the American Institute of Architects, National Board of Underwriters, National Association of Builders, National Association of Building Inspectors and National Association of Fire Engineers met in New York and adopted a building ordinance containing among others the following clauses:

Clause E.—At least four inches of brick should intervene between the ends of wooden floor beams entering a brick party wall from opposite sides.

Clause F.—The walls of brick buildings should be tied at intervals by the floor beams, which, if of wood, should be so anchored to the walls that in case they are burned off they will not in falling overthrow the walls.

ANCHOR PLATE FOR SELF-RELEASING GIRDER.

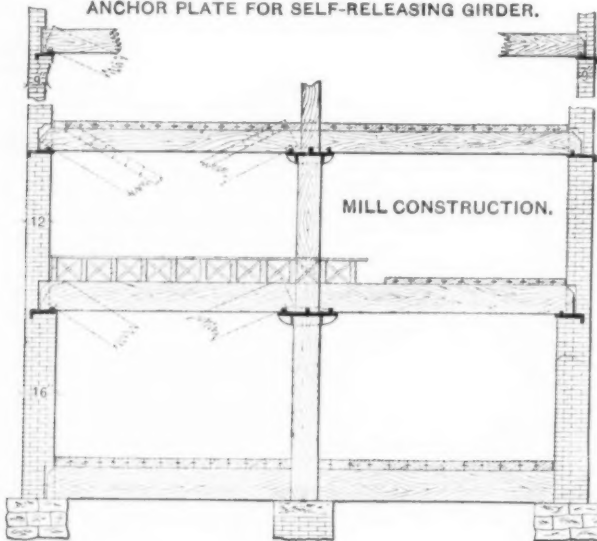


FIG. 2.

works and the finished material was shipped back, making a double freight charge. The league has also aided in organizing the Southern Paint Manufacturing Co. here to start works and make paint, painters' materials and fire-proof roofing paint.

There seems to be a good deal of uncertainty and demoralization among the employes and officials of railroads here, probably in consequence of the changes and consolidations in the past few weeks. Passenger rates are being cut by each road, but unfortunately freight rates don't seem to be affected and hang on the high notch with a most disagreeable persistency.

Labor matters affect us but little here. Sometimes they are used for political effect, but colored workmen don't take kindly to strikes, and the South has had

The system which appears to come nearest to meeting these requirements is that of Duvinage & Co., of Brooklyn, N. Y. This is based upon the use of an anchor plate set in the wall, having a lug on the end which enters a hole bored in the bottom of a joist. The accompanying cut (Fig. 1) shows the plates as made for 2 or 3 inch joists and suitable for either a single or party wall. Fig. 2 shows this system as applied to a building and Fig. 3 the anchor plate made for central posts. Fig. 4 shows in detail the method of setting the anchor plate in the wall and resting the beams upon it.

The advantages of this system will readily be seen: In safety to the walls should the beam be torn out, in strengthening them and thoroughly bracing the

building and in reduced cost of constructing. To set a beam on this anchor plate merely requires a hole of sufficient size in the bottom of the beam. This fits over the lug on the plate and holds all secure.

The many architects who have examined this system pronounce it to be based upon the correct principle of construction and have given it strong endorsements.

P. Duvinage & Co., the makers, are prepared to furnish estimates either from designs furnished or from the regular patterns on hand.

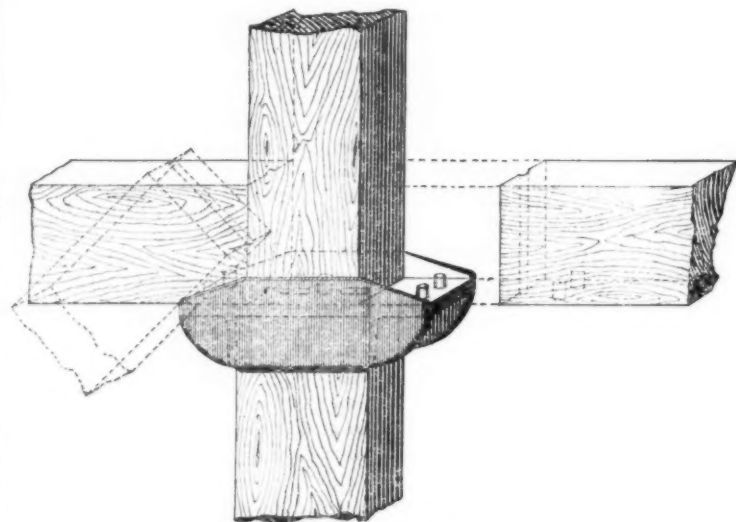


FIG. 3.—ANCHOR PLATE FOR POST.

### Southern Lumber Notes.

LEWIS GITTINGS and Ella M. Cook intend to carry on a saw and planing mill business at Little Rock, Ark. A plant has been secured and John L. Cook appointed manager.

DURING the month ending July 31 there was measured at the public boom in Darien, Ga., 3,750,000 feet of square, scab and sawn timber and lumber. This does not include the sawn timber and lumber which came in during the month and was carried direct to the private booms and lumber yards in Darien.

THE timber and lumber exports of Pensacola, Fla., to foreign ports for the week ending August 3 were 6,502,000 superficial feet, valued at \$78,274. The shipments to

MESSRS. J. H. O'NEAL & SON, late of Piggott, Ark., have removed their stave mill to St. Francis.

MR. D. L. DOW intends erecting saw and planing mills at West Cookville, Tenn., and has purchased all machinery needed from the Indiana Machine Works, of Fort Wayne.

THE Lynn Lumber Co. has completed the erection of its new saw mill at Fort Lynn, Ark.

J. H. FIELD, of Wright, Miss., has purchased the interests of his partners in the Eldonia Lumber Co., and will continue to operate the plant.

S. H. ROBINSON has purchased the Robinson Lumber Co.'s property at Surrounded Hill, Ark., and will continue its operation.

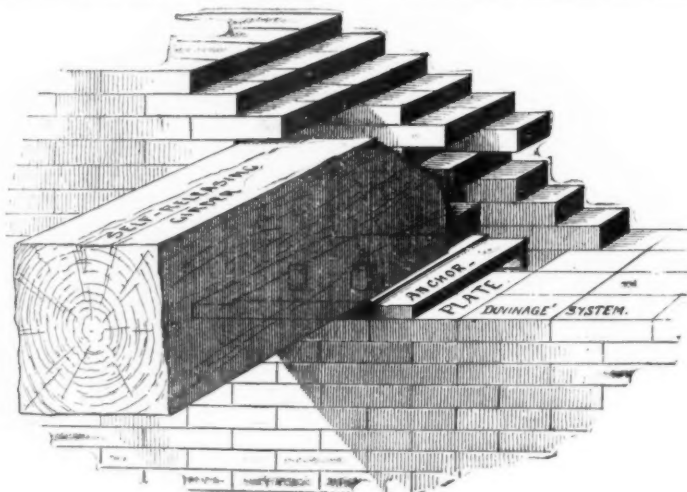


FIG. 4.—DETAILS OF WALL SETTING

domestic ports were 648,000 feet, valued at \$5,500.

W. L. WILCOX has purchased the interest of Wm. L. Rhodes in the De Soto (Miss.) saw mill and will continue to operate it.

J. H. POLSENDORFF & SONS, of Evansville, Ind., have purchased 6,000 acres of timber lands in the Mississippi river bottom, in Lauderdale county, Tenn., from J. C. Marley, and a saw mill and 2,250,000 feet of saw logs from J. T. Williams, of

THE Scatchard Lumber Co. has been organized at Decatur, Ala., to succeed the Standard Lumber Co. The concern has a fine milling plant in operation.

DURING the month of July there was shipped from Fernandina, Fla., 628,492 feet of lumber and 270,000 shingles. Of the lumber 291,945 feet was destined for foreign ports.

WORK on the Crosby Lumber Co.'s band and circular saw mill at Lenoir, Tenn., progresses rapidly. Their plant is to cut



poplar and all kinds of hardwood, and its capacity per annum will be 25,000,000 feet.

O. M. ELROD & Co. have completed the erection of their new stave factory at Harned, Ky.

INCLUDED in the freight carried from Jacksonville, Fla., by the steamship Seminole on the 7th inst. was 127,000 feet of lumber, 1,000 crossties and 3,000 bundles of shingles.

MR. O. G. ROBINSON, of Halifax, Fla., lately disposed of 100,000 feet of lumber in Daytona and Ormond.

MESSRS. HUNTER, BENN & CO., by Frank D. Aiken, agent, made a shipment of over 1,000,000 feet of pine lumber from Brunswick, Ga., last Saturday. The lumber was loaded on the British steamship Minian Stewart for Greencock, Scotland, and consisted of 2,669 pieces of sawn timber and 844 pieces of deals, making in all 3,513 pieces. The sawn timber measures 1,050,000 feet and is valued at \$10,000, while the deals measure 44,000 feet and are worth \$550, making the cargo consist of 1,094,000 feet. The total valuation is \$10,550.

#### Receipts of Lumber and Coal at Newport News, Va.

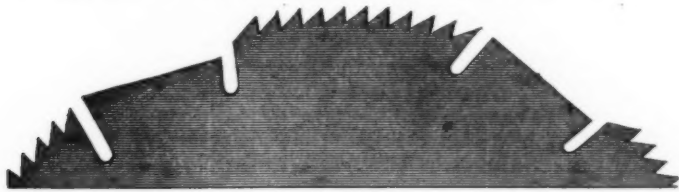
The receipts and shipments of coal and lumber at Newport News, Va., as given below, present a most remarkable showing and increase over last year. This data is furnished by E. D. Hotchkiss, general freight agent of the Chesapeake & Ohio Railroad, and represents tonnage received from stations on their line of road for the six months ending June 30, 1892.

Months.	Coal in pounds.	Lumber in pounds.
January.....	129,597,400	3,759,700
February.....	199,372,000	2,837,900
March.....	166,418,600	8,570,100
April.....	157,209,600	3,344,500
May.....	121,512,300	816,000
June.....	154,027,800	1,967,000
	930,127,700	21,595,200

From the above figures 415,236 tons of coal have been received at Newport News, and 10,798 tons of lumber or about 10,000,000 superficial feet, all of which has been shipped to coastwise and foreign ports.

#### An Improvement in Circular Saws.

Sanderson Brothers & Co. (Limited), Sheffield and London, have brought out what appears to be a remarkable improvement in circular saws, which will commend itself to proprietors of steam saw mills.



AN IMPROVEMENT IN CIRCULAR SAWS.

The idea is to cut up timbers and plane the planks by once passing the wood over the saw. The manner in which this dual task is performed will be understood by referring to the accompanying illustration. The teeth, of course, cut the wood, and the planing is done by the plane, represented by the unbroken line. This alternation of teeth and planing edge is continued all round the periphery, so that it happens that immediately the teeth have operated upon the wood the area cut is immediately covered by the plane. A series of practical and successful tests were recently made at the works of George Wailles & Co., Euston Road, N. W., and there all sorts of wood in varying thicknesses, from the smallest to the largest commonly sawn, were successfully dealt with by saws of varying sizes and strengths.—*The Ironmonger*, London.

#### The Protection of Wire Ropes.

Mr. Herbert Cheesman, of the Hartlepool Ropery Co., Limited, of Hartlepool, England, in a communication to the *Engineer* (London) gives the following points about the protection of wire rope which may be of interest to our readers:

"The employment of wire ropes is unquestionably increasing by rapid strides, although many difficulties naturally arise, owing to the varied conditions of the work. The main object therefore to accomplish is the maximum amount of work at the minimum cost, and the solution of this problem presents more difficulties than would be imagined. The results of work done by wire ropes are so entirely conditional, owing to so many features there are to consider, such as velocity, friction, power transmitted, runnerway, pulleys, etc., and last, but by no means least, the important question involving how to protect the wires against corrosion and other injurious influences, as a large number of wire ropes are rendered worthless entirely owing to this; and it is noteworthy that the keenest corrosion in most instances takes place in the internal part of the rope, so that inspection is of little or no avail except for the external wires. These deleterious effects may be going on rapidly inside the rope, whilst the continued coating of grease, etc., on external wires may make the rope appear perfectly satisfactory. Now, the question is obvious, viz.: What are the causes of many of these detrimental effects? Acid saline waters and other destructive agencies are the difficulties to contend against in most workings where wire ropes are employed; these waters produce a molecular change in the iron or steel eliminating the nature of the metal, and so rendering the wires brittle; so much for the action of these deleterious matters. The next point to deal with relating to the causes of this destruction is the construction of the wire rope, which may be very variable, such as in the number of wires, strands, etc., but the centre, or main core, as it is commonly termed, is generally composed of a tarred hempen rope or core. This rope, by virtue of its absorbent nature, greatly facilitates the injurious effects caused by sulphuric acids and saline waters, as the tar in this hempen rope is soon dissolved by the action of these acids, and it then becomes a porous body or sponge and absorbs and holds them in contact with the metal.

"It is customary in many mines to coat

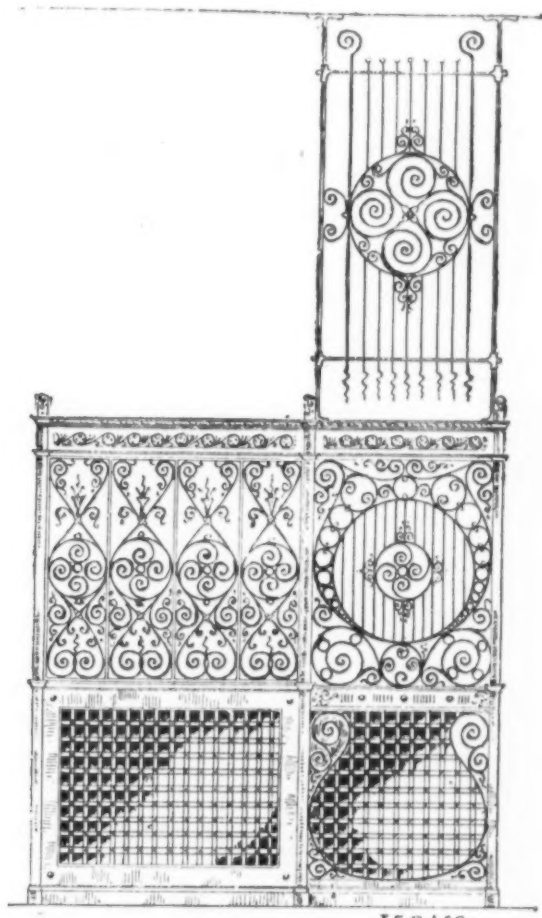
this destruction is materially lessened, if not entirely eradicated.

"Friction also means loss of power and attrition, undue wear caused by friction; it is therefore clear that lubrication, together with imperviousness to moisture and gases, adhesiveness to the metal intended to protect, flexibility so that it may be free from tendency to crack when the cable or rope is bent; these, together with sufficient body to withstand and reduce attrition, are the elements to be provided. It is with full cognizance of these facts that I have deduced from a series of experiments, together with careful study, a remedy which embodies these wants. This remedy is being employed by the Hartlepool Ropery Co. in the rope which it is introducing, and known as Cheesman's A.C.L. wire rope. It is so manufactured that in the process of its formation the cores and wires are all thoroughly coated with a composition called glissantoline, which is an excellent preservative of iron and steel. This fills up the interstices of the rope, and makes it impervious to the causes of corrosion or

#### Artistic Elevator Inclosures.

The illustration of artistic elevator work which we show indicates the great advance that has been made in fine metal work. The people want new and original designs, and the work must be artistically built and finished according to the most advanced skill of the trade. J. E. Bolles & Co., Detroit, Mich., have just brought out a new series of original designs, and our illustration is from their latest catalogue, No. 11, just published. This company gives special attention to artistic metal work for elevator inclosures, cabs and similar work. They also do the most modern work in such departments as bank work, artistic steel grills, iron stairs, etc. Those who are interested should send for this company's latest catalogue, for it is their aim to keep at the head of the procession in their line.

They state that they are now filling a large order for the elevator inclosure and stair railing for W. P. Callahan's elegant eight-story office building at Dayton, Ohio—Williams & Otter, architects; they have



ARTISTIC ELEVATOR INCLOSURE

rust, such as steam and acid waters, found in the workings of mines or elsewhere, at the same time acting as a constant lubricant to the rope and individual wires, thus obtaining greater flexibility, lessened friction and maximum durability of the rope. The following tests will doubtless be of interest to your readers: (1) Sample, immersed twelve weeks in solution, one part salt, three parts water, unaffected. (2) Sample, ten weeks over steam exhaust. (3) Sample, ten weeks in hot water, 140° F. (4) Sample, twenty-two days strong solution sulphuric acid. (5) Sample, twenty-two days strong solution sulphuric acid at temperature 130° Cent. or 280° F. (6) Sample, twelve weeks in sea water. (7) Sample, seventeen weeks in open air, subject to all atmospheric changes. (8) Sample, twelve weeks buried in earth, just sufficiently low enough to receive moisture from an overflow of water, 140° F., twelve hours per day. (9) Sample, two weeks in strongest solution ammonia. All the above samples were totally unaffected."

also just shipped a carload of iron stairs for the Stephenville courthouse, Texas—Gordon & Laub, architects, San Antonio; a complete set of bank fixtures for the State Bank of Perry, Mich., besides various other contracts for bank work, grills and architectural iron work from all parts of the country.

It is reported that a test has been made by the Southern Iron Co. of steel recently made by the Talbot process. So far as can be learned the results were satisfactory. Mr. Talbot's method is to pour the molten iron through a column of molten strongly basic slag. By this means a certain proportion of phosphorus and silicon are removed and the metal then worked in an open-hearth furnace in the usual manner. As yet little more than preliminary tests have been made. The ultimate success of the plan is much to be desired, as it will possibly solve the troubles which seem to stand in the way of making steel from Southern iron.

## MECHANICAL.

### Notes on Machine Shop Practice.

By Albert D. Pentz.

A TAPPING chuck is not a luxury, but a necessity in any shop. An old three-jawed universal chuck that has the capacity to hold every size of tap that is needed in a shop serves for the foundation of this tool. The jaws must be turned or bored true in the grip, and a stiff elastic face put on each of them. Spring steel plates that are made to lie flat over the concave faces of the jaws, which plates are turned over the angular sides of these jaws and pinned there to hold them, serve for these elastic faces. It is obvious that a smooth cylinder like the shank of a tap, gripped within a chuck having elastic-faced jaws, is held from turning by a yielding friction of greater or lesser tenacity in proportion as the jaws are tightened or relaxed. Hence in a chuck of this kind, if the jaw screws are turned until the shank of a tap is lightly embraced and the position of these screws is noted, then if it takes the friction produced within the jaws by a one-eighth turn of the screw extra to furnish the power to cut twelve threads to the inch, but which friction will yield before the tap can break, the friction to operate 12-thread taps of all sizes is found. The power to operate all other pitches of taps may be found by the same experimental process of determining the amount the screws must be turned to compress the spring faces sufficiently to produce the required friction. A graduated circle on or about one of these screws will assist the workman to set the friction with perfect exactness. It is, of course, requisite that all taps shall have their shanks proportionate to their sizes, and that these shanks should run true. In use, the shank of the tap should be well oiled. Use in drill press. An effective tapping chuck of this character would meet a ready sale.

How shall we discipline an apprentice so that he can effectively work and perseveringly apply himself to the demands of modern practice, and not force him into the rut of plodding dullness, is a vital question. The machine shops of this country do not discipline boys like those in Europe, where an apprentice is a servant day and night for a long term of years. As a result the European journeyman generally is hardened to work. He makes each minute count, and he is able to, because he has been forced to it so long that it has become his habit. This kind of workman is trained to get the most from his hands that they can produce. The American boy, on the contrary, has the idea of labor saving drilled into his consciousness constantly. He is taught that he will rise in the trade if he is smart enough to do work by the aid of mechanical devices and with no labor of the hand that can be avoided. So far, this is right for the right person. But most boys do not become effective tool producers, and are obliged when they become journeymen to labor alone by the skillful use of their hands. It is to such that the need of discipline becomes a matter of vital importance. From this lack of discipline many American mechanics at the age of thirty, unable to rise, consider themselves failures at their trades. It may be that they actually are failures, but the probability is that they don't know how to work. I admit that they all are good workmen, but I assert that they don't know how to work hard all day. They have never forced themselves to lay aside every thought but those that apply to their tasks during work hours. They have never devoted their every faculty to the idea of getting the greatest results from one whole day. A

man cannot apply himself like this the first day he tries, nor within the first month, but in time this discipline becomes a habit, and to one possessed of it in connection with productive intelligence all things are accomplishable.

MECHANICAL engineers who believe in their profession are glad and encouraged to note the tendencies toward practical progress that are evident in at least one institution which makes the attempt to produce professional mechanics. Two points of advance are indicated—that of attempting to produce a revenue, and the bringing of the students into the actual presence of commercial work. Every engineer is interested in having these experiments succeed, and will give them encouragement to the extent of his influence. Every advanced practical man also will see in this step that which it is his interest to applaud.

THE same necessity which a student finds for practice the practical man finds for abstract knowledge. There should be means provided in engineering schools whereby ambitious mechanics could exchange practical knowledge for technical graduation, and it would seem to be to the interest of both to do this.

A NEWLY designed engine lathe of excellent workmanship has its means to keep the driving spindle in adjustment endwise at the extreme end farthest away from the line centre. The journals are cylindrical, and the spindle has no other means for locating its end position. This collar arrangement seems to be a grave error, but the cylindrical bearings are excellent, as far as can be seen from a published drawing. A spindle held endwise at one extreme end, and that one the farthest away from its centre, will expand and shrink from temperature, and disturb the position of the line centre considerably. The two bearings and the cone pulley will furnish the heat by their friction. A spindle twenty inches long that is heated 20° C. will expand nearly .005 inch. Now, suppose a machinist is making a nut with a square thread, which nut is held in the chuck on this spindle. This nut may fairly be imagined to be but partly threaded at quitting time, when the spindle is .005 inch larger than it is when cold. At starting time in the morning the spindle will be cold, and the tool will not match the space between the threads by the amount of contraction, and the tool will break or the nut will be completed in that particular and be spoiled before the spindle has expanded again as much as on the day before, even if such expansions should be every day alike. Again, in a piece of work between centres the same fault will occur; besides, there will be a constant need of tailstock spindle adjustment to compensate for the thrust which this expansion delivers against the back centre. I believe that the maker of this tool will eventually change this feature.

MANY times a few pieces of machine work are to be made that must be correct, but there will not be enough of them to get fine special tools made, nor profit enough to put a great deal of super extra hand work into them. In such cases the skill to construct temporary special devices that produce correct results has great value. Such tools must be cheap, and if they are soon destroyed by use they will doubtless outlast the occasion for which they are made. I have made a drill jig out of a piece of good sheet steel one-eighth inch thick, left it soft, and that jig guided the drills properly into 1,000 pieces, after which it still was as good a jig as it ever was. All there is to such a jig is the plate with two or three guide pins to locate it properly on the piece it is to make and the holes drilled through it of the proper size and positions. Often a casting made from

a pattern that cost fifty cents will make a marvelously handy jig. A set screw or a taper wedge may be used as a cheap arrangement to hold it to its work. Many such tools are not planed at all. The work is positioned against the points of ordinary set screws, and the tool is upheld on studs or other attachable feet of simple sort.

THERE is a little drill jig used in some shops to drill plates with where there are but a limited number needed. When this jig is used in a speed lathe or under a drill press having but one spindle it consists of only a thin plate with holes all of one size, but in the required location, through it. Its outline is that of the piece it operates, and in fact it often is one of these same pieces. Directly opposite the drill in the table or backing plate is placed a pin that fits the holes in the jig, and which pin is short so as to not extend through it. In drilling the jig is on the bottom with the pin in one of the holes, and the plate to be drilled is on top. The drill used is a very short stiff one that has its lips as close to the chuck as possible; in fact the drill must not have a possible side deflection of any consequence. The plate to be drilled is held to the jig by a clamp until two holes at a distance from each other are drilled. Then into these holes are dropped pins that fit them, which pins extend through

the surface operated on. Any novice can file flat with a device like this.

### Bell's Improved No. 3 Steam Hammer.

The great obstacle to the general and extensive use of steam hammers in the ordinary smith's shop has been the seemingly great cost, when one has not carefully computed the immense saving in labor, wages, time, fuel and materials which a good steam hammer insures. No person appreciated this fact more than Mr. David Bell, the veteran ship-builder and iron founder, whose establishment has been one of the institutions of Buffalo, N. Y., for forty-seven years, when he invented and perfected his No. 3 steam hammer, shown in the accompanying cut. In aiming to build a steam hammer at a price within the reach of the many, Mr. Bell has also given it the virtue of extreme simplicity, coupled with strength and great economy both in operation and in the matter of repairs. Four sizes have been built and placed on the market, capable of striking a blow of from 2,000 to upwards of 10,000 pounds, and as rapid as required.

It is of a very simple construction, having single column standard, with bed-plate and cylinder cast in one piece, very strong,



BELL'S IMPROVED NO. 3 STEAM HAMMER.

both the plate and the jig. Then the clamp is removed and the remainder of the drilling done without it. Remarkably accurate results come from the use of this kind of jig. If more than one size of hole is needed, all are drilled to the smallest size and then counter-bored larger where needed.

FILING jigs also are immensely convenient tools of a temporary kind. In these there is no necessity to harden them all over; they may be made of cast iron if of any considerable size, and guide plates may be attached by counter-sunk head screws.

AMONG temporary filing jigs there is a very valuable little device called a rocking jig or an equalizer. The idea in it is that the piece of work shall conform its upper surface to that of the file in the direction of the length of the file. This may be accomplished by having flanges on the right and left sides of the rocking piece that rise up above the surface to be filed, and pivot this rocking piece by trunnions from the stock of the jig, which stock is held in a vise. The centres of the trunnions should be about on a line with the surface being filed and midway from back to front. It is presumed that the file will rock in the other direction to accommodate

self-acting, and by taking steam at both ends of the cylinder, all of the sizes strike a square blow. Either of the sizes will strike a heavy or light blow, as required, and can be worked either double acting or single acting, the change being easily and quickly effected.

Mr. Bell claims that this is the best and most economical hammer in use, far superior to all belt, trip and helve hammers, easier to manage and keep in repair, and at least 50 per cent. cheaper than any hammer yet invented that will do the same work.

Nos. 2 and 3 sizes will work up old car axles and make the best iron that can be produced for connecting rods, eccentric rods and all parts of engines and other machinery where the best quality of iron is required. They will also work up old scrap, quantities of which is always to be found in a blacksmith shop, and produce the best of iron for all ordinary purposes.

No. 4 has been constructed with a view to furnish, at a very moderate price, a hammer that will forge large and heavy cranks and shafts, and the frames and other bearings connected with locomotives, not only with expedition, but with the greatest accuracy and saving of labor; and it is claimed that twice the number of locomotive frames and bearings can be turned



out in the same time that can be done with the appliances hitherto employed for doing the same work. With a heating furnace it will work up scrap into billets for making car axles, crank shafts and all heavy forgings which have heretofore required large and very expensive hammers to accomplish.

Over forty-five of these hammers are in use in the city of Buffalo alone, and many hundred scattered over the entire country are doing excellent work to-day. A complete list of the users of the Bell steam hammers is contained in a handsomely illustrated catalogue just issued, which has some very fine half-tone views of Buffalo and a portrait of Mr. Bell. They will be sent upon application to any of our readers who will take the trouble to send address on a postal card.

#### A New Riveting Machine.

We illustrate herewith a new riveting machine recently brought out by the Toledo Machine & Tool Co., of Toledo,

against two spring stops which are pressed downward during the first operation, and the slide or punch is brought down the second time without removing the foot from the treadle, and the riveting process is completed, as shown in the small cut herewith.

This press is especially adapted for riveting ears on all kinds of tin pails and buckets of every description. It is claimed that a small boy with little practice can rivet from fifteen to twenty gross of pails per day of the ordinary small pails, and the work done on this machine is so very superior to that done by hand in the ordinary manner, that the hand work is not to be considered at all when it comes to a matter of neatness and finish, as every rivet is a finished and perfect job, leaving a nicely rounded finish. The advantages of riveting with this machine will, therefore, be readily seen, as a single trial is enough to convince the most skeptical. A patent is now pending on this machine. These

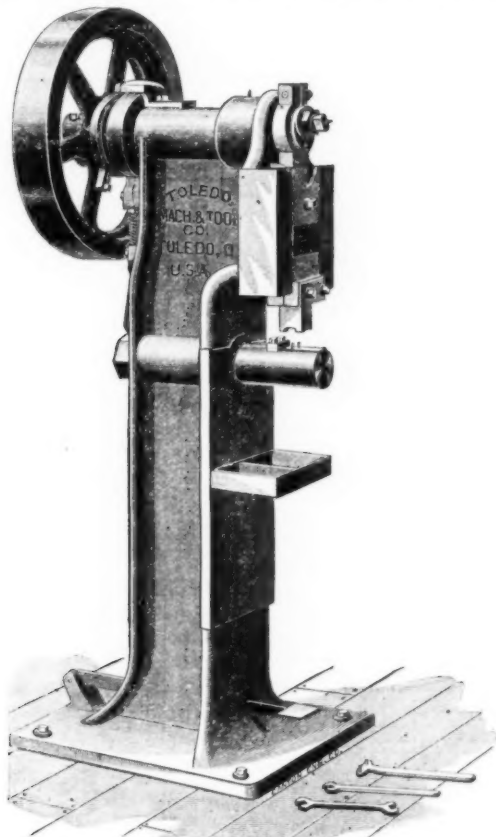


FIG. 1.—A NEW RIVETING MACHINE.

Ohio. The illustration shows something of an ordinary press with a projecting horn, this horn containing the riveting die. The first operation is to lay the two rivets in the special grooves provided for the rivet heads, place the edge of bucket or pail over the rivets and against the gauge, when the ear to be riveted is also placed on top of the pail, which also fits into a gauge

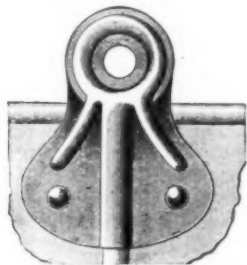


FIG. 2.—RIVETING PROCESS COMPLETED.

provided for the purpose. The treadle is then tripped and the punch is brought down in contact with the die, and the stock in the pail and the rivet is pierced at the same time, bringing the rivets through both stock and ear. With a rapid movement the pail is brought towards the operator with the ear attached and brought up

people are also making quite a complete line of power presses and other sheet metal tools. Full particulars will be furnished by addressing the builders.

The *Engineering Magazine* for August opens with an interesting article by Gen. Herman Haupt on "Compressed Air for Street Cars." Following it are two articles on the Mississippi river problem, one by Chauncey L. Dutton entitled "The Levees Indispensable," and the other by H. St. L. Coppee on "The Yellow River and the Po." Mr. Coppee was a member of a committee of engineers appointed to report upon the levee system to the Interstate Mississippi Improvement and Levee Convention. "Ornament in Architecture," by Louis H. Sullivan, is a well-written and excellently illustrated article, showing some beautiful architectural designs. "Does Capital Need High-Priced Labor?" by W. E. Partridge, is thoughtfully worked out and peculiarly appropriate after the great labor movement which has recently excited attention. Robert T. Hill presents an article on "Underground Waters of the Arid Regions" which is worth attentive reading. "River Improvement at Portland," by George W. Freeman, tells of this interesting Oregon city

and the work being done on the river leading from it to the ocean. "The Railway of the Future" by Oberlin Smith, is a thoroughly interesting article. "Gold Mining in the Black Hills," by Harry M. Hanson; "Practical Hints on House Heating," by Leicester Allen, and "Evolution of the Constructive Faculty," by John M. Burnett, are other valuable articles presented. The editorial departments are filled in the able manner which has always characterized this journal.

#### Watson's New Screwdriver.

The screwdriver shown in the illustration is a new design of that often-invented



WATSON'S NEW SCREWDRIVER.

tool used so universally by all classes of mechanics. In the new design the inventor has placed the shank at an offset to the bit in such a manner that with a slight forward pressure and a revolving movement of the hand the screw can be sent home more readily than with any other style of screwdriver. That part of the handle on which the hand exerts the pressure being in line with the bit, it forces the screw directly in instead of giving it a wabbling motion when first started. The handle, which is made of cast iron, revolves freely about the shank. The screwdrivers are also manufactured with wooden handles and are made very light and durable. The invention has been patented, and is manufactured by Mr. E. M. Watson, of Beloit, Wis.

#### "The Star" Columbia Squaring Shears.

The Stark Machine & Tool Co., of Buffalo, N. Y., always up to if not ahead of the times in the introduction and manu-

one and thirty-one inches long, respectively, a fact which every experienced tinner will appreciate who sometimes find sheets a trifle too wide.

The side legs and guides for the upper knives are formed in one piece. The crosshead has wide scraped bearings and gibs, with set screws to take up wear. The shear-blades are planer-ground and not ground on a grindstone, and are guaranteed by the manufacturer to be perfectly true. They can be taken out of the shear and replaced without lining.

This shear has a full set of back, side and bevel gauges, and is warranted for all the uses it can be put to in an ordinary

shop or factory for sheet iron, say twenty-two or lighter.

The *Journal of the Franklin Institute* for August opens with an interesting article by Dr. Hermann Mehner entitled "A Motor Without Fuel, and the Second Principle of Thermo-Dynamics." Dr. Mehner has utilized the absorption and evaporation of liquid ammonia by a fixed alkaline salt. George W. Davis concludes his valuable contribution on the "Nicaragua Canal." John Hartman, the well-known blast furnace engineer, contributes "Notes on the Blast Furnace" and gives some illustrations from micro-photographs showing the grain of different grades of pig iron. "The Present Status of the Storage Battery System of Street Railway Propulsion" is given by Pedro F. Salom. Dr. Hans von Shombeck presents two interesting articles, one "On the Specific Heat of Brines of Different Specific Gravity," and the other "Additional Notes on the Composition of the Liquid Ammonia of the Trade."



THE STAR COLUMBIA SQUARING SHEARS.

facture of new and improved tools for working metal, have recently added a new "squaring shears" with the above title to their list of a thousand or more tinner's and metal-workers' tools, which will undoubtedly be well received in the South, judging from the growing demand for it nearer home.

The Star Columbia squaring shears is a foot squaring shears for light sheet iron and tin, and is made in two sizes, viz., twenty and thirty inches, which cut twenty-

THE Poitevant & Favre Lumber Co., of Pearlinton, La., is building all the passenger cars for the East Louisiana Railway. The company for which the cars are built finds it can save \$1,200 on each car by having them built in Louisiana. They are built of yellow pine and finished in ash and poplar.

THE Alama Electric Street Railway, at San Antonio, Texas, will be sold by order of court on October 4 to satisfy the creditors.

## ELECTRICITY.

### Transmission of Power by Electricity.

By D. A. Tompkins.

Power for manufacturing purposes is now commonly obtained in two ways, viz., by water and by steam. The question is often asked, which is cheaper to employ, water or steam-power? The question can only be answered by a calculation in each special case. In case of water-power the factors are usually cost of developing the power, freight rates and cost of labor. In case of steam-power the factors are usually cost of fuel, freight and cost of labor. In some cases the interest on the cost of developing the water-power would exceed the cost of fuel.

Very many excellent water-powers are inaccessible to means of transportation. Much study and experiment have lately been devoted to the subject of developing such powers and generating electrical currents, then conducting the current to distant point or points convenient for operating manufacturing plants and developing power by means of the current.

This is done, for short distances, in cases of all electric street railways, steam being the original source of power, however, in most cases.

In Germany 100 horse-power has been successfully transmitted over 100 miles and successfully utilized. This power was utilized at the Frankfurt Exposition. In the United States power has in several instances been transmitted twenty to forty miles with some degree of commercial success. Entirely satisfactory results have not yet been attained for distances greater than eighteen to twenty miles.

For the purpose of operating street cars the current is what is known as the direct current. It is commonly generated at a central point at about 500 volts pressure, and may be utilized from a conductor at points anywhere along the conductor and to a distance of five to seven miles from the station. The current is generated at 500 volts, and is conducted over the wires and utilized at the same pressure.

For utilizing water-powers and transmitting the power by electricity, alternating currents seem to promise most in the matter of long distance transmission. The alternating current may be generated at, say, 300 volts pressure, which is a current not dangerous to human life. Then by means of a converter, which is a sort of induction coil, this 300-volt current may be converted into one of 5,000 or 10,000 or even 50,000 volts. The higher the pressure the smaller the wire necessary to transmit a given power. At a very high pressure a comparatively small wire may be used for the transmission, but the very high pressure is very dangerous, and, therefore, at the point where it is to be used it is reconverted again to, say, 300 volts and utilized to operate a motor. When it is desired to transmit power from a water-power to a distance of, say, twenty miles, the following equipment would be necessary:

The necessary water-wheels and power house.  
Generating dynamos.

Converters.

A line of wire (copper) from the generating plant to the point where power is to be utilized.  
Converters.

Motors.

The cost of a complete plant to generate current and transmit power about ten miles would be about \$150 per horse-power—that is to say, the plant necessary to deliver 100 horse-power a distance of ten miles from the water-power would be about \$15,000.

To deliver 100 horse-power twenty miles from the water-power would require a plant that would cost about \$175 per horse-power, including development of water-power and buildings. For short distances

the wire is strung on poles as in the case of electric railway plants, but for greater distances those best informed on the subject think it best to lay the wire inside of pipes filled with oil, the oil being the insulating material.

The field of power transmission by electricity has not been much explored. There is nothing in the way of its successful accomplishment, except that the shops in which the machinery can be built are pressed with orders for electric-railway machinery, and really can hardly afford to abandon a developed line of trade to explore a field which is yet very little worked. When it is considered that in the United States over 400 electric street railways have been built in the last ten years, and that all the machinery has been constructed by what is practically now two companies, viz., the Thomson-Houston-Edison combination and the Westinghouse, it will be appreciated that the wonder is that so much has been done.

### Electrical Coal-Mining Syndicate.

A new and important departure in company enterprises has recently made its appearance in the north of England. This is an association for the purpose of mining coal by means of electricity. The company will take the mines from their owners, install electrical coal cutting and hauling machinery and carry out the whole of the work in connection with coal production. According to the statement made in London *Lighting* they will charge a fixed contract price, probably about one shilling per ton.

If it has an extended field, and to judge from the strength of the board and the warmth with which it has been supported there is every prospect that it will have, the effect upon the mining districts will be simply revolutionary. Electrical coal cutting is not only far cheaper than hand labor, but practically dispenses with it, so far as the cramping and stunting department of hewing is concerned. Thus an enormous number of outspoken and able-bodied men are liable to be thrown out of employment unless the increased rate of production enables a correspondingly increased number of men to be employed in healthier work above bank. The list of the board representing this electrical coal-cutting contract corporation includes at present the names of Sir Archibald Campbell, Mr. Lindsay Wood (chairman of the Durham Coal Owners' Association), Mr. Frank Stobart (representing Lord Durham), Mr. James Knowles (of Pearson & Knowles, Wigan), the Hon. G. W. Winn and Mr. W. T. Goolden. It would be almost impossible to put together a more influential or representative syndicate, and the effects of its formation upon the industry will be watched with great interest.

### Electricity in the Machine Shop.

At a recent meeting of the Northwest Railroad Club, C. A. Seeley read a paper on the use of electricity in railroad and machine shops. Among other suggestions made was one as to the difficulty to be overcome in the speed of small motors as compared with that of the machines used in iron working.

One convenient way of overcoming this would be to mount the motor on a plate, on which standards would carry a shaft and pulley so arranged that the pulley would be in frictional contact with the pulley on the armature. This counter pulley could be ten or more times the diameter of the other and have a grooved cone on one side, from which a round belt could be run to a grooved pulley on the machine to be driven. By a system of idlers, tension and direction could be given to the belt. The motor having a

constant speed, the cone would permit changes of speed at the tool. Many forms of special tools could be devised in this connection.

In the Crewe shops in England portable drills capable of drilling one inch holes in steel are in use which are electrically driven. The drill spindle is the arbor of a worm wheel, and a dynamo armature is on the shaft of the screw which works the wheel, and the whole apparatus—dynamo and all—weighs sixty-five pounds. Another application used in the same shop is a saw for cutting tubes out of locomotives. The saw arbor is also the arbor of the dynamo armature, and the saw is just large enough to enter the tube. The frame work carrying this is held up against the tube sheet by hand, an eccentric motion forces the saw through the tube on one side, and then by another motion the saw is carried around, completely severing the tube. The saw is then returned to the centre and withdrawn, and the tube can then drop down. The beauty of this operation lies in its celerity of cutting, and in the fact that the tube end is neatly cut off square and ready at once for scarfing for a new safe end.

### Electrical Notes.

It is reported that Boston capitalists have secured options on the High Shoal property, a few miles above Dallas (N. C.) on the South Fork. The entire volume of the South Fork has there a fall of between thirty and forty feet. It is proposed to utilize this in producing electricity, which will be supplied to the many mills and towns in the vicinity.

THE Belt Line Electrical Road at Savannah, Ga., has been completed all but the power-house. A trial was recently made, securing the current from the City & Suburban Line, and all worked smoothly. When these two lines and the Coast Line are completed Savannah will be one of the best equipped cities in the country, so far as street railways are concerned. The Belt Line and Electric Railway Companies operate ten miles each; the Coast Line has seven miles, and the City & Suburban eight miles within the city limits and several miles more outside.

THE Monroe Water Works & Light Co., recently chartered by New Orleans parties, has commenced work on its electric-light plant at Monroe, La. The plant is expected to be completed in ninety days.

THE Wichita Falls (Texas) Electric Light & Power Co.'s efforts for the erection of an electric-light station have been somewhat hindered, but the franchise has been secured and the plant will doubtless soon be installed.

WINSTON, N. C., is putting in a complete electrical fire-alarm system with eight bells, two in each of the four wards. The contract was let to a New York company, who will put in the Gamewell system.

TELEGRAPHY is justly popular among young men and women, and the amateurs sometimes rival professional operators in their speed and correctness. All over the country there will be found a few in each town who amuse themselves by this means. In some places, where a number are interested, a central station has been formed, and, according to the *Evening Post*, New York, there are a couple at Cranford, N. J., who propose to consolidate. If they do they will have twenty stations and three and one-half miles of circuit. The lines are governed by an executive committee, which purchases supplies and transacts routine business, and there is a complete code of fire, burglar and emergency signals. These young people, with a little training, could make such a service of great convenience to small towns and villages, and when, after a while, the telephone becomes common property, it is likely that the amateurs will increase in

number and usefulness. Such an idea carried out in farming regions would be a source of pleasure and convenience. It would help overcome the monotony of farm life and give the amateur an insight to the great science of electricity, besides a good training in patience and a knowledge which would, if he became even moderately expert, aid him in securing employment during the winter.

THE S. D. Warfield Co., of Baltimore, Md., has completed plans and specifications for the Elkton (Md.) Electric Light Co.'s plant. Contract for the erection of the plant is to be awarded on September 5th, and it is expected to be completed by the middle of November. The company has a contract from the city commissioners of Elkton to furnish the town with seventy-five twenty-five candle power incandescent lamps at \$18 each from January 1st, 1893, and recently made the announcement that from the time of their plant's completion to the beginning of the contract they would furnish the lamps free.

THE Temple (Texas) Electric Light Co. is contemplating the enlargement of its plant in the fall, but as to what improvements and changes will be made it has not yet definitely decided.

BUSINESS men having an electric fan in their offices will find it greatly to their advantage to set it at such an angle as to direct the air downward instead of straight out into the room. By doing this the air current is better distributed and its effect is more pleasant.

ELECTRICIANS frequently notice that their dynamo "sweats," that is, has little beads of moisture over the field magnets and bed. This is many times owing to alternate currents of warm and cold air striking the machine, and should be avoided as much as possible.

THE semi-annual report of the gas inspector of Louisville (Ky.) shows the cost of lighting the city for the first half of this year to be \$30,646.66 against \$34,729.66 for the corresponding period of last year. This shows a net saving of \$4,083, which is entirely due to the electric-light district, as the cost of gas lamps has always shown an increase from year to year.

THE Asheville Street Railway Co. and the West Asheville & Sulphur Springs Railway Co., operating electrical railroads at Asheville, N. C., are putting in water-wheels to generate electricity for the operation of their roads.

ROANOKE, VA., will soon have among its other progressive features a well-equipped electrical railroad. The company headed by S. W. Jamison, which several months ago bought out the street railway and electric light and power company, has been industriously engaged in reconstructing the lines, building extensions and equipping with electricity. It is believed that when it has carried out its plans Roanoke will have twenty miles of electrical railroad.

THE Galveston City Railroad Co., of Galveston, Texas, has been sued by the Detroit Electrical Works, of Detroit, Mich., to recover some \$38,000, which is claimed to be due that concern by the Galveston City Railroad Co. for machinery and equipment. The railway company alleges that the plant did not come up to specifications and for that reason rejected it.

IT is reported that the General Electric Co. will show net earnings of between \$5,250,000 and \$5,500,000 for this year. Of the \$50,000,000 capital stock \$30,000,000 have been issued.

THE Rochester (N. Y.) Gas Co. and Rochester Edison Electric Light Co. have bought out the Brush company in that city and formed a consolidation. The capital stock is \$4,400,000, and will be listed on the New York Stock Exchange.



## IRON MARKETS.

## Philadelphia.

[From our own Correspondent.]

PHILADELPHIA, August 10.

With the low prices for pig iron which have prevailed since the beginning of the second half of the year there would appear to have been no room for further concessions, but during the past two weeks the accumulation of iron on account of the idleness of many rolling mills and foundries have led producers to shade prices in order to effect sales. This course has been particularly noticeable on the part of some of the Southern furnaces, but as yet there has been no marked break in prices of the Northern producers. Notwithstanding the favorable terms offered, the concessions have had no effect in stimulating buying. As long as there is a lack of firmness on the part of the furnace buyers will adhere to their policy of purchasing only such material as they actually require to meet immediate wants. The demand is of such a character that the offer of lower prices seems useless, as consumers continue to buy from hand to mouth. Under these circumstances it is difficult to see any signs of early improvement, although the starting up of many of the idle mills should have an effect of strengthening the market. It is the knowledge of this expansion of the demand that causes special activity on the part of the furnaces to effect sales, with the result that competition is so close that mills can generally make their own terms for the crude material they require. Leading producers of favorite brands of both foundry and forge irons are firm at quotations given, but little business is being done. While the following are the asking rates for leading makes, special sales have been made at concessions, depending on quantity, time and point of delivery:

Standard Pa. No. 1 X.....	\$15 00@15 50
" No. 2 X.....	14 00@14 50
" Forge.....	13 00@13 50
Southern Coke, No. 1 foundry.....	14 25@15 00
" No. 2.....	13 50@14 00
" Gray Forge.....	12 50@13 25

## Pittsburg.

[From our own Correspondent.]

PITTSBURG, August 10.

The status of the pig iron market remains unchanged except for a feeling that "the end of the worst" has passed, and that the next week or two will see a great change. It is not expected to be in the nature of a boom, but in a satisfactory increase of business over what has been done from week to week for several months past. The main reason for this is the firm conviction that the labor troubles are about at an end, and that a resumption of work in the mills is a question now of a few days' time. The manufacturers and the Amalgamated Association have tried with earnestness to come to an amicable agreement and failed. The proposition of the employers to submit the entire scale matter to a board of arbitrators has met with a flat refusal at the hands of the workers' organization. Another conference is being held to-day, but it will scarcely prove any more profitable than the others, and may be the last that will be held. It is reasonably certain that the manufacturers will not accept the scale with \$5.50 per ton for boiling as the base. It is equally certain that the men will not take any less. The probabilities are that the mills will be run non-union. This means a great loss to the Amalgamated Association, but it means a great benefit to the furnace men who are piling up stocks of pig iron. Once the mills of this region are in operation, the situation will become perceptibly brighter.

Since the shut-down of the mills the trading done has been so insignificant that brokers and producers rather preferred to say that they were doing absolutely nothing. The several grades of mill and foundry

iron have held up much better than any other lines, and are to-day firmer in price than other brands. In those lines the only transactions that took place were done, and that amounted in all to only a few thousand tons in several weeks. During the week there was some talk of blowing out several furnaces, but nothing of the kind has taken place. They expect the reaction to set in at once, and will be much disappointed if the next week or two does not see a reopening of good, solid business. Prices remain unchanged.

Gray Forge.....	\$12 60@12 75
Mill Iron.....	12 75@13 00
Foundry No. 1.....	14 30@14 60
" No. 2.....	13 35@13 60
Bessemer.....	14 00@

## Wheeling.

[From our own Correspondent.]

WHEELING, W. VA., August 10.

There has been no material change in the conditions surrounding the iron markets hereabouts since last reported, and as a consequence there is no notable variation in either prices or demand. Pig iron continues depressed beyond expectation, and finished iron is stronger and more active on account of the decreased supply. Consumption shows no material improvement, and till it does there will be no room for self-congratulation among iron makers of any class. The present stimulated condition of the finished market owes its existence entirely to violent conditions, and while the same may be said to be the cause of pig iron depression, the depression has been so long continued that the rule hardly holds good. Pig iron was dull before the wage question closed up so many mills and before the summer season of repairs began. That it should grow duller and duller was but the natural outcome of the conditions surrounding other lines. The furnacemen show a remarkable degree of hardihood, however, for they are all still in full operation and continue to store away their product. It will take a long season of unexcelled prosperity to clear up the yards and put production on the basis of consumption and prosperity. There is a general feeling here, however, that the present inflation of the finished iron market will not be entirely collapsed when the mills resume and that prices will be better the latter part of this year than they were in the same season of last year. This is expected to help pig iron a little at least, and it is devoutly hoped it will.

In this immediate section Bessemer steel continues in very light demand, with few sales being made, and they mostly for delivery within thirty days. There has not been any general understanding as yet as to what prices should be asked for iron for delivery up to the first of January, and as a consequence furnacemen are a little chary of naming present prices for deliveries at too remote periods. Sales continue to be chiefly of foundry irons at prices last quoted. In most cases both buyers and sellers are slow to give out the money passing for actual sales, preferring to let quotations, which are at this time always high, go for publication.

Prices show no material change from last week, being about as follows:

No. 1 Foundry.....	\$14 00 cash
No. 2 Foundry.....	13 00 cash
No. 3 Foundry.....	12 50 cash
(50 cents added for 4 months' time.)	
Bessemer stands at.....	14 00@14 25
Gray Forge.....	12 25@12 50

## Chicago.

CHICAGO, August 6.

There is little of interest to report regarding the Chicago market of the past week. Both buyers and sellers have ceased to make any predictions regarding the time when an improvement in the market may be expected. Meanwhile the former, with a few exceptions, are buying only for nearby needs, while sellers seem to be disposed to make prices more attractive by lengthening deliveries. A fair volume of

business is doing in Northern and Southern cokes. Lake Superior charcoal is fairly active and prices are being held firm.

We quote for cash f. o. b. cars Chicago:

Southern Coke No. 1 foundry.....	\$14 50@15 25
" No. 2 foundry.....	13 50@14 50
" No. 1 soft.....	13 50@14 50
" No. 2 soft.....	13 00@14 00
Ohio silveries No. 1.....	17 50@18 00
" No. 2.....	16 50@17 00
" strong softeners, No. 1.....	16 50@17 00
" No. 2.....	14 50@16 00
Lake Superior charcoal, Nos. 1 & 2.....	16 50@17 50
Tennessee charcoal, No. 1.....	16 50@17 50
Standard Alabama car-wheel.....	20 00@22 00

ROGERS, BROWN &amp; MERWIN.

## Cincinnati.

CINCINNATI, August 6.

The signs of the past week are better demand for mill grades of pig iron, larger inquiries for charcoal iron and a little better feeling in some quarters as to the result of largely increased sales.

The improvement in the demand for mill iron is in part due to the increase of work thrown on to the Western mills in consequence of the labor troubles at Pittsburgh. Aside from this, however, Western rolling mills are having an unusually large trade from agricultural and car works. In charcoal iron the principal transactions were with Eastern malleable works and Western car works.

In the rank and file of the trade the buying tends from hand to mouth, but it is freer than it has been for some time. Salesmen find no difficulty in securing small sales in abundance. The general temper of the market is greater interest, with more freedom in taking hold of small lots, and a growing belief that there is a real bottom to the pig iron market, and at last it has been reached. Still, it must be admitted that the market is not strong, and that concessions are made when "gilt-edged" buyers enter the field.

We quote for cash f. o. b. cars Cincinnati:

Southern coke No. 1 foundry.....	\$13 25@13 75
Southern coke No. 2 foundry and	
" No. 1 soft.....	12 25@12 75
Hanging Rock coke No. 1.....	16 00@16 50
Hanging Rock charcoal No. 1.....	19 50@20 00
Tennessee charcoal No. 1.....	16 25@16 50
Jackson Co. stone coal No. 1.....	16 25@16 75
Southern coke, gray forge.....	11 25@11 75
Southern coke, molined.....	11 00@11 50
Standard Alabama C. W.....	18 00@19 00
Tennessee C. W.....	17 00@17 50
Lake Superior C. W.....	17 50@18 00

ROGERS, BROWN &amp; CO.

## St. Louis.

ST. LOUIS, August 6.

We quote for cash f. o. b. cars St. Louis:

Southern Coke No. 1.....	\$14 25@14 50
" No. 2.....	13 25@13 50
" No. 3.....	12 75@13 00
" Gray Forge.....	12 25@12 50
" Charcoal No. 1.....	16 00@16 50
" No. 2.....	15 50@16 00
Missouri Charcoal No. 1.....	14 50@15 00
" No. 2.....	14 25@14 50
Ohio Softeners.....	17 00@17 50
Lake Superior Car Wheel.....	18 00@18 25
Southern.....	18 75@19 25
Frick's Connellsville Foundry Coke.....	5 65

ROGERS, BROWN &amp; MEACHAM.

## Buffalo.

BUFFALO, August 6.

There is a little more activity to be noticed, some one or two good sized sales having been made. A little more disposition to consider prices on the part of buyers is also apparent.

One of the most demoralizing effects on the present market is produced by a circular letter asking for offers on a special lot of iron, no prices being named.

We continue to quote the prices of last week as a fair indication of the present market.

We quote on the cash basis f. o. b. cars

Buffalo:	
No. 1 X Fdy., Strong, Coke Iron, Lake Superior ore.....	\$15 25
No. 2 X Fdy., Strong, Coke Iron, Lake Superior ore.....	14 25
Ohio Strong Softener No. 1.....	15 50
Jackson County Silvery No. 1.....	17 30
Lake Superior Charcoal.....	16 50
Tennessee Charcoal.....	17 00
Southern Soft No. 1.....	14 15
Alabama Car Wheel.....	19 00
Hanging Rock Charcoal.....	20 50

ROGERS, BROWN &amp; CO.

## Louisville.

LOUISVILLE, August 6.

There has been no change in prices for delivery throughout the year, and furnaces

for long deliveries are firm, making no concessions. For prompt shipment, thirty days and cash, inside figures have been made, especially on iron intended for the central Pennsylvania district. These were desirable orders calling for considerable tonnage and immediate delivery, as rolling mills there that have been idle now have orders that will keep them actively engaged for several months. There has been but little selling of car wheel irons, and prices remain the same.

We quote for cash f. o. b. cars Louisville:

Southern Coke, No. 1 Foundry.....	\$13 25@13 75
" No. 2.....	12 25@12 75
" No. 3.....	11 50@12 00
" Gray Forge.....	11 00@11 50
Charcoal, No. 1 Foundry.....	15 00@16 00
Car Wheel.....	17 50@19 00

GEO. H. HULL &amp; CO.

## Chattanooga.

[From our own Correspondent.]

CHATTANOOGA, TENN., August 9.

Since our last letter the extreme heat has abated, and the advent of cooler weather was followed by brisker trade in iron. The market on bar iron is not steady, prices having risen from 1.75 to 1.80 cents from stores. We quote on bar iron: 1.58 to 1.60 cents half extras at mill, 1.63 to 1.65 cents delivered; from stores 1.80 to 1.85 half extras. No indications for an immediate change in price on pig iron. We quote:

Southern Coke No. 1 foundry.....	\$13 00@13 50
" No. 2.....	10 75@11 50
" No. 3.....	10 50@10 75
" Gray Forge.....	10 00@10 25
" No. 1 soft.....	10 75@
" No. 2 soft.....	10 25@

## Southern Iron Notes.

MESSRS. KIFE & LOGAN, of Lancaster, Pa., are developing an iron mine at Knapp of Reeds, N. C., the ore of which is said to be of fine quality and plentiful. In the early fall arrangements will be made to put in considerable machinery and operate on a large scale. Mr. Geo. D. Pittard has charge of the mine.

THE Sloss Iron & Steel Co., of Birmingham, Ala., will put its No. 2 furnace in blast as soon as the relining and the repairs now being made to it are completed.

At a meeting of the Sheffield Land, Iron & Coal Co. held in Nashville last week, a syndicate of Memphis, Nashville and Pennsylvania capitalists purchased considerable real and personal property from the company for \$300,000. This deal relieves the Sheffield company of its entire indebtedness, and it is said that it also places it on a sound financial basis. The organization of the new concern is expected to be perfected in the near future.

A LONDON dispatch, dated the 9th inst., states that a syndicate has been organized in that city, on a prospectus prepared in New York, to develop important coal and iron interests in the South, the chief operations to be in Alabama. It is also stated that representatives of the syndicate will sail for New York this week, one of them being the Duke of Marlborough's secretary. Sir Lothian Bell is also mentioned in connection with the enterprise.

The Vanderbilt Steel & Iron Co., which lately blew out its furnace at Birmingham, did so in order to make necessary repairs to same and to reline it near the top, which gave out after the furnace had been running two years. The company will now increase the plant's capacity about forty tons and erect an ore-washing plant of about 100 tons capacity daily.

THE work of erecting the South Baltimore Rolling Mill, formerly the Beckwith Mills, of Paterson, N. J., which are being removed to Curtis Bay from Paterson, is progressing rapidly, and they will be ready for operation by October at the latest. When completed they will give employment to 150 to 175 men, and will have a capacity of 100 to 150 tons of merchant bar iron and plate iron daily.





Rio Janeiro with assorted cargo of lumber and timber, containing 561,538 feet, and valued at \$7,300. Vessels are loading daily for coastwise ports, and the shipments for the current month are expected to be larger than usual. Foreign trade in lumber and timber is quite active, and from the present outlook the shipments for the year will be very large. The largest cargo of lumber ever cleared from a Southern port was taken out on the 5th inst. by the steamship Miriam Stewart for Greenock, Scotland. The cargo consisted of 1,094,000 feet, and was valued at \$10,550, being shipped by Hunter, Bem & Co. There is a general activity everywhere present throughout the milling section, and orders are plenty, many mills having more than they can conveniently handle. The demand is for all kinds of lumber and timber, and as the prospects for timber are somewhat improved on the other side of the water, we expect a better trade than usual during the fall and winter months.

### Mobile.

[From our own Correspondent.]

MOBILE, ALA., August 9.

There has been more or less activity during the past week in lumber and timber circles, and the feeling generally is better among operators. The very creditable showing which this port will make in lumber and timber shipments for the year ending the 31st of current month has caused considerable interest throughout the market. It is said that further improvements in this harbor are projected, and that on the completion of these rail communication will be established with the great timber belt of Mississippi, and later on with Kansas City and the West. The situation here at present is of such a character that operators are readily making new ventures, and shippers are active making contracts for autumn delivery. Prices continue very steady, and hewn timber is quoted at 12 to 12½ cents per cubic foot for 100-foot average, and classing B1 good. There is a light demand for oak at the moment. Sawn timber is dull at 10½ to 11 cents per cubic foot, basis of 40-foot average. Laths at mill are quoted at \$1.25 per thousand, and \$1.50 delivered. Shingles are in good demand and very firm for choice makes. Drawn No. 1 are quoted at \$3.00 delivered, and No. 2 at \$2.00. Sawn 16-inch whole-sale, 50 M and up, f. o. b., best \$2.70, and prime \$2.35 per thousand. The exports for the week were 655,357 feet of lumber, and since September 1, 1891, 56,754,839 feet. At Pensacola the same encouraging features surround the market, and the amount of tonnage here at present is larger than usual. Lumber shipments will be very heavy for August, but timber, both hewn and sawn, is dull, with prices very low in Europe. Freights from Pensacola are firm, but a shade easier than in July. Late sail charters have been made at \$4 17s. 6d. and \$5 2s. 6d. for United Kingdom and Continent. The South American trade is becoming a feature again, and there is considerable doing in charters for River Platte and other ports. Rates for Buenos Ayres and Montevideo are quoted at \$14.00, and for Rio Janeiro \$16.00 to \$16.50. The shipments of lumber and timber from Pensacola to foreign ports for the week ending the 2d instant were 6,502,000 feet, valued at \$78,274. Coastwise shipments were 648,000 feet, valued at \$5,500.

### Memphis.

[From our own Correspondent.]

MEMPHIS, TENN., August 8.

The same improvement in the market noted a week ago continues, and seems to have become permanent. There is an increased call for lumber both by orders through the mails and personal inspection. A firm of heavy hardwood dealers in St. Louis, who were here looking after their

interests and placing contracts, report the outlook very good for fall and winter trade, and think the prices for hardwood will be somewhat advanced shortly. The representative of a large New York firm was here recently purchasing oak, ash and gum. They were the first to introduce gum on the Eastern market, calling it "hazlewood." Quotations remain as last given. The supply and demand for the ordinary grades are about equal, and seem likely to remain so for the present.

There are no changes in current quotations, which remain as follows:

BLACK WALNUT.	
1st and 2d, 1 1/4 and 2 inch.....	\$5 00 70 00
Common.....	35 50 40 00
Counter tops.....	90 00 110 00
ASH.	
1st and 2d clear, 1 to 4 inch.....	24 00 30 00
Common.....	12 00 14 00
CYPRESS.	
1-inch, 1st and 2d clear.....	22 00 24 00
1 1/2, 1 3/4 and 2 inch.....	24 00 26 00
Fencing 1x6, 16 feet.....	15 00 16 00
POPLAR.	
1-inch, 1st and 2d clear.....	24 00 25 00
1 1/2 and 2-inch, 1st and 2d clear.....	26 00 28 00
Common boards.....	14 00 16 00
Dressed, 1 1/4 & 2-in., 1st & 2d clear.....	28 00 30 00
Common dressed, 1-inch.....	16 00 17 50
Squares.....	22 50 26 00
COTTONWOOD.	
1 to 3-inch mill run, culls out.....	9 00 12 00
Squares.....	12 50 16 00
RED GUM.	
1st and 2d.....	16 00 20 00
Common and culls.....	8 00 10 00
OAK.	
1 to 4-inch, 1st and 2d.....	24 00 26 00
Common, 1 and 2 inch.....	13 00 15 00
Quarter oak, 1-inch, 1st and 2d.....	30 00 32 00
Quarter oak, 1 1/4-inch and up.....	34 00 36 00
White \$1 higher.	
YELLOW PINE.	
1st and 2d, 1 1/2 and 2-inch.....	18 00 20 00
Dressed.....	25 00 30 00
Flooring, 5 and 6 d and m.....	17 50 20 00
Flooring, 3 and 4 d and m.....	17 50 20 00
2d flooring.....	15 00 17 50
Heart step lumber.....	27 50 30 00
Ceiling, 1st and 2d, 3/4, 5/8 and 3/8.....	17 50 20 00
Ceiling, 1st and 2d, 3/4 and 5/8.....	16 00 18 00
Common f. o. b. Memphis.	
Car lots.....	12 50 15 00
TIMBER (LOGS).	
Poplar.....	6 00 10 00
Cypress.....	6 00 9 00
Cottonwood.....	3 00 4 00
Gum.....	3 00 4 50
Oak.....	6 00 12 00
Ash.....	8 00 13 00
Black walnut.....	15 00 20 00
SHINGLES.	
No. 1 heart cypress, 16 inch.....	3 00 4 00
No. 1 sap, 16 inch.....	2 25 3 00
LATH.	
Poplar.....	2 00 2 75
Cypress.....	2 50 3 25
Pine.....	2 00 2 50

### Chattanooga.

[From our own Correspondent.]

CHATTANOOGA, TENN., August 9.

There is no apparent change in the lumber market here, except a better demand for all sorts of stuffs.

We quote f. o. b. cars Chattanooga:

PINE.	
All heart flooring.....	\$20 00
1st standard flooring.....	15 00
2d standard flooring.....	13 00
Common.....	11 00
1st ceiling, standard.....	13 00
2d ceiling, standard.....	12 00
Common.....	10 00
1st standard W. board.....	9 00
2d standard W. board.....	8 00
No. 1 standard W. board 1/2.....	8 00
No. 2 standard W. board 1/2.....	7 00
WHITE OAK.	
1 to 4 inch, 1st and 2d.....	\$18 00
Green, 1 and 2 inch.....	15 00
RED OAK.	
1 to 4 inch, 1st and 2d.....	\$14 00
Common, 1 and 2 inch.....	12 00
SHINGLES.	
No. 1 heart, cypress.....	2 90
No. 1 heart, pine.....	2 25

### Beaumont, Texas.

BEAUMONT, TEXAS, August 8.

The tone of business at this and nearly every point in the lumber region of Texas is considered very healthy at this juncture, and the activity previously noted, especially at Beaumont, Orange and Westlake and Lake Charles, La., has not diminished. Genuine improvement is the rule, and the condition of the lumber trade in Eastern Texas shows a steady and substantial growth in nearly all branches. There is every prospect of a brisk trade during the remainder of the current year, with a corresponding advance in values, prices having already advanced 50 cents per thousand on dimension, and on special bills 50 cents to \$1 per thousand. Mills are in nearly every case well supplied with orders, and several bills for railroad material have been placed during the week at an advance of 50 cents per thousand over old figures. There are points, notably those along the Houston, East & West Texas

Railway, where there is a quiet tone prevalent in lumber circles, most of the mills preferring to hold their stocks and lessen the output, expecting a sharp advance in the near future. The majority of operators are not so firm in their views, but are willing to rise and fall with the tide, and are therefore always filled with orders. The Beaumont Journal, which is the organ of the Texas lumber trade, in its last review of the market says: "The market maintains an even tone, together with increased briskness in demand. During the past month shipments were undoubtedly larger than for any similar period within two years. One mill shipped from its own yard over 1,000,000 feet more than was cut, and other concerns made shipping records nearly as good. Late reports from Kansas, where it was feared the corn had been seriously damaged, are to the effect that good rains have fallen and that a large yield will be the result. This improvement insures increased trade with the State. The demand from Texas is growing, dealers ordering much more liberally than heretofore." Under these most encouraging conditions manufacturers are greatly encouraged, and many new plants are projected at different points, and this, with the completion of railroads now in progress, will place this industry on a firmer basis than ever. Westlake advises report a brisk movement in shipping and building of additional tonnage, which is much needed at present, the output being very large, shipments being made to Mexico and other Gulf ports, and even to Northern cities.

## COTTON MARKET.

NEW ORLEANS, LA., August 8.

Editor Manufacturers' Record:

The market to-day declined sixteen points from the closing of Saturday, due more to an absence of buying orders than any disposition to sell, and the nearer we get to a more liberal movement of the new crop, the less inclination will there probably be to take hold of cotton for the purpose of raising prices more than temporarily, unless crop accounts should assume a character to cause either original buying or an active covering by those who have been sellers. We have taken the position, which is only a natural one, that if a large part of the surplus of American which has been and is being carried was not disposed of before the incoming crop made its appearance, the question of future supply would not have bullish effect, even though that supply should be based upon reduced estimates of acreage, as well as loss in condition of the growing crop. October sold on Saturday at 7 cents and to-day at 6.84. The interest here has been principally in that month, and hence it has governed in strengthening and weakening prices of other months in proportion as the contracts in that month have been liquidated. We, like many others, believed in the beginning that the non-passage of the "Hatch" bill would favorably affect the market, perhaps decidedly, but as the market kept constantly improving before any definite action was taken by Congress, which finally resulted in a postponement of the bill to the next session, it was realized on the Monday morning following that that action by the Senate that the new buyers had not made their appearance, and, therefore, the market met with no resistance when the longs began to realize. It was unfortunate that a decline should have followed a withdrawal of the anti-option bill, as it gives color to the claims of those favoring it, that a future market depressed the thing itself, but if the decline since that time has been due to such causes as we have mentioned, and others that are too patent to require mention.

Cotton is like any other commodity. If

the supply is super-abundant, buyers feel no timidity in providing for their wants as sparingly as possible, and when we are on the eve of a crop the size of which may be anywhere between 6,500,000 and 8,500,000 it leaves an open field for those who may wish to back their judgment upon the smaller or the larger crop.

That trade in Great Britain is extremely poor is evidenced by the fact that in January the weekly consumption of that country was estimated at about that of last year, but, inasmuch as up to Friday last their receipts of American were 48,000 bales less than the year before, and their stock of American on hand and afloat was 490,000 bales more than the previous year, it shows a most marked difference in consumption that can only be explained by the various causes that have operated to prevent the use of as much cotton as was expected six months ago would be manufactured. The price of silver has been one of the principal causes to that end.

ATWOOD VIOLETT & CO.

CLOSING PRICES OF FUTURES AUGUST 10.

Months.	New Orleans.	New York.	Liverpool.
August.....	6.85 1/2	7.15 1/2	3 55-64 sellers.
September.....	6.85 1/2	7.18 1/2	3 57-64 sellers.
October.....	6.95 1/2	7.29 1/2	3 59-64
November.....	7.04 1/2	7.39 1/2	3 60-64
December.....	7.13 1/2	7.49 1/2	3 62-64
January.....	7.21 1/2	7.59 1/2	4 buyers.
February.....	7.31 1/2	7.68 1/2	4 3-64
March.....	7.40 1/2	7.77 1/2	4 5-64 buyers.
April.....	7.49 1/2	7.87 1/2	4 7-64
May.....	—	—	—
June.....	—	—	—
July.....	—	—	—
Tone of market.....	Steady.	Barely steady.	Barely steady.

CLOSING PRICES OF SPOT COTTON AUGUST 10.

Grade.	New Orleans.	New York.	Liverpool.
Middling.....	7 1-16	7 1/2 1/2	3 15-16
Low middling.....	6 9-16	7 1/2 1/2	3 5-16
Good ordinary.....	6 1/2	6 1/2 1/2	3 1/2
Tone of market.....	Dull.	Steady.	Free supply.

THE Belmont Nail Co., the Benwood Iron Works and the Wheeling Iron & Nail Co., of Wheeling, W. Va., which recently combined as the Wheeling Iron & Steel Co., held a meeting last week and elected the following directors: Earl W. Oglebay, J. J. Hoffman, Sr., J. D. Dubois, Joseph Bell, Chester R. Hubbard, Wm. F. Stifel, H. H. Hornbrook, Alonzo Loring and Geo. K. Wheat. At a subsequent meeting of the directors they organized by electing Mr. Hubbard president and general manager; Mr. Dubois, secretary, and George Wise, treasurer.

THE gross earnings of Chesapeake & Ohio for July were \$876,751. This includes the Elizabethtown, Lexington & Big Sandy and other recently acquired lines.

### Sullivan and Corbett Meeting at New Orleans.

For this occasion the Queen & Crescent Route will sell round trip tickets at half rates. Tickets to be sold September 3, 4, 5 and 6, good returning until September 20, 1892. Connecting lines will also sell tickets over the Queen & Crescent Route at reduced rates.

This line is the only line running Vestibuled Trains Cincinnati to New Orleans. It is 94 miles shortest, and its regular trains make quickest time both from Cincinnati to New Orleans and from New Orleans to Cincinnati.

All tickets are accepted on our Vestibuled Trains without extra charge. Our rates and the rates of our connections over this line are as low as by any other.

We have two through Vestibuled Trains between Cincinnati and New Orleans every day in the year.

On Sunday, Sept. 4, 1892, we will, in addition to regular service, run a special train to New Orleans making a fast run through. All tickets will be good on the special as well as on regular trains.

For information, sleeping car berths or rates, or reserved seats in the Club, ask nearest Railroad Agent, or write to D. G. EDWARDS, G. P. A., Q. & C. Route, Cincinnati, Ohio.

# CONSTRUCTION DEPARTMENT.

**WE PUBLISH**, every week, a list of every new factory, of whatever kind, projected anywhere in the South; every railroad undertaken, and every mining company organized. This information is always fresh, and, by enabling manufacturers to correspond with the projectors of such enterprises before their supplies of machinery have been purchased, is of great value. Manufacturers will find it to their interest to read this department carefully each week.

\* Means machinery is wanted, particulars of which will be found in "Machinery Wanted" columns.

In correspondence relating to matters reported in this paper, it will be a favor if it is stated that the information was gained from the MANUFACTURERS' RECORD.

## ALABAMA.

Anniston—Ginnery.—The cotton ginnery reported last week as being built by the Barbour Machine Works is being put up for experimental purposes.

Birmingham—Plumbing Company.—The People's Plumbing Co. has been incorporated by A. W. Fulgham, John T. Davy and W. A. McClelland; capital \$5,000.

Birmingham—The Excelsior Mining Co. and the Cahaba Coal Mining Co. have filed articles of incorporation, and will continue to transact business under the latter name; capital stock \$1,975,000.

Bridgeport—Wagon Works.—B. M. Brooks is erecting wagon works.

Bridgeport—Saw Mill Machinery Works.—The Rodebaugh Manufacturing Co. (C. H. Plummer, owner), of Jackson, Mich., manufacturer of saw mill machinery, will remove its plant to Bridgeport.

Dothen—Cotton Gin and Handle Factory.—Phillips, Folks & Co. are to erect a cotton gin of fifty bales daily capacity and an axe-handle factory.

Furman—Flour Mill.—Carter & Glover will put additional machinery in their flour mill.

Huntsville—Flour Mill.—A movement for the erection of a flour mill is on foot. George I. Motz, secretary, can give information.

Piedmont—Cotton Gin.—J. H. Hebble will put in an 80 saw cotton gin, scales and press.

## ARKANSAS.

Argenta—Cotton Compress.—The Union Cotton Compress Co., of Little Rock, reported last week as to erect a cotton compress in Argenta, has commenced work on same. It will cost \$5,000.

Arkansas City—Lumber Company.—G. F. Rohr, H. H. Marshall and others have incorporated the Elyria Lumber Co. with a capital stock of \$10,000.

Baxter—Marble Quarry.—Chicago (Ill.) capitalists have purchased a tract of 160 acres of marble land in Baxter county from J. A. Cockrum and J. H. Ramey, of Line Rock, and will develop a marble quarry on same.

Conway—Woodworking Factory.—Pence & Slade will establish a general woodworking factory, including the manufacture of furniture.

Little Rock—Cotton Mill.—The Little Rock Cotton Mills contemplate putting in new machinery.

Little Rock—Lead Mine.—Selden R. Williams, of Nashville, Tenn., has purchased the Kellogg lead mines in Mineral township, near Little Rock, for \$14,480.

Stottsville—Saw Mill.—A. Stotts will put a new outfit of machinery in his saw mill.

Texarkana—Cotton Compress.—The cotton compress reported last week as to be built in Texarkana by the Union Cotton Compress Co., of Little Rock, is now in course of erection. It will cost \$50,000.

Van Buren—Cotton Compress.—The Union Cotton Compress Co., of Little Rock, is erecting in Van Buren the cotton compress previously reported. It will cost \$50,000.

Waldo—Lumber Mill.—The Neimeyer Lumber Co. will build a new lumber mill on the line of the Cotton Belt road.

## FLORIDA.

High Springs—Phosphate Plant.—M. F. Simmons will put in machinery for cleaning, drying and crushing phosphate.

Jacksonville—Coffee and Spice Mills, Bluing Factory, etc.—A. E. G. Betts and Fred C. Chase & Co., reported last week as to consolidate, will operate as the Betts Chase Chemical Co. A new factory building is now being erected for the company's use.

Jolly Bay—Saw Mill.—S. Strickland will put new machinery in his saw mill.\*

## GEORGIA.

Augusta—Brick Works.—John C. Anners, secretary and treasurer of the Aiken (S. C.) Fire & Ornamental Brick Co., writes as follows concerning the report that his company will remove its works to North Augusta: "We may erect a plant at North Augusta in the future, but not at present."

Cumming—Flour Mill.—John F. Duffey is remodeling his flour mill.

Flint—Tannery.—The Chattanooga (Tenn.) Tannery Co. is building a branch tannery at Flint.

Gainesville—Cotton Mill.—The Georgia Manufacturing Co. will put in machinery to double its cotton mill's capacity.

Macon—Electric Light Plant.—The Central Railroad of Georgia (office, Savannah) will erect an electric-light plant in connection with the Macon shops, for lighting its yards, depots and offices.

Madison—Canning Factory.—The Morgan County Canning Co., reported last week as organized, has ordered outfit for its canning factory. W. R. Musten is president; G. D. Perry, vice-president; C. W. Richter, treasurer, and W. H. Halsey, secretary.\*

Newnan—Water Works.—W. B. Berry, H. C. Fisher, C. C. Parrott and others have applied for charter for a water works company. The capital stock is to be \$10,000, with privilege of increasing to \$100,000.

Rome—Canning Factory.—A canning factory may possibly be erected. H. B. Parks can give information.

Rome—Bauxite Furnace.—Geo. A. Stuck, of Selma, Ala., contemplates erecting a 40-ton bauxite furnace at Rome.

Savannah—Ice Factories.—The Gorrie Ice Co., the Knickerbocker Ice & Coal Co. and the Crystal Ice Co., each operating an ice factory, have consolidated.

Thomasville—Cotton Compress.—The Thomasville Cotton Compress Co.'s press has been completed.

## KENTUCKY.

Addison—Flour Mill.—Dick Bros. have purchased and will improve and operate the Phoenix Roller Mill.

Arlington—Canning Factory.—H. L. Willey and others will erect a canning factory.

Ashland—Telephone Exchange.—The East Tennessee Telephone Co. has completed and put in operation a telephone exchange.

Augusta—Handle Works.—The F. A. Neider Co. has enlarged its works and will put in some special machinery for working sheet metal.\*

Beattyville—Coal Mines, etc.—William J. Hendrick, P. S. Campbell and Archer Harman have incorporated the Lee Coal Co. for the purpose of mining coal and other minerals. The capital stock is not to exceed \$2,000,000, divided into 20,000 \$100 shares.

Beattyville—Coal Mines, etc.—William J. Hendrick, C. R. Hill and Archer Harman have incorporated the Todd Coal Co. for the purpose of mining coal and other minerals. The capital stock is not to exceed \$2,000,000, divided into 20,000 \$100 shares.

Cadiz—Flour Mills.—A. P. White & Co. will remodel their flour mills.

Henderson—Washing Machine Factory.—O. W. Rush, E. S. Oberdorfer, J. B. Knott and S. J. Banks, recently reported as to organize a company to manufacture washing machines, have incorporated as the Self Heating Washing Machine Co. The capital stock is \$10,000.

Louisville—Paper Mill.—The Du Pont Paper Mill Co., operating a paper mill, has reorganized under the name of the Louisville Paper Mill Co., and will continue to operate its plant. A charter has been obtained for the new concern with B. Du Pont, Julius Bamberger and John H. Leathers as incorporators. The capital stock is \$350,000.

Louisville—Viaduct.—The Louisville & Nashville Railroad Co. will construct a viaduct over its tracks on Kentucky street at a cost of \$50,000.

Louisville—Oil Refinery, etc.—The Globe Refining Co., reported last week, was incorporated by Louis K. Ferguson and Rozel Weissinger. Its purpose is to establish and operate an oil refinery, cooper shop, etc.; capital stock \$50,000.

Ludlow—Electric Plant.—The Ludlow Electric Light, Power & Manufacturing Co., reported last week as incorporated, will put in a plant.\*

Newport—Pearl-button Factory.—The Ohio

Valley Pearl Co., recently reported as incorporated, has purchased all necessary machinery for manufacturing pearl buttons and other pearl goods.

Richmond—Ice Factory.—The Richmond Ice Co., reported last week, lately overhauled and improved its ice factory.

Richmond—Planing Mill.—D. H. Myers will probably rebuild his planing mill, reported in this issue as burned.

## LOUISIANA.

Abbeville—Diffusion Plant.—J. H. Putnam, of Rose Hill Refinery, will erect a diffusion plant. The machinery has been purchased.

Hanlan—Flour Mill.—J. Decker, of Louisiana, has purchased for \$12,000 Sylvester Brower's flour mill at Hanlan and will operate it.

Independence—Cotton Gin, Corn Meal Mill, etc.—Sylvester Brower will erect a corn-meal plant, a cotton gin and may be later a saw mill.

Lake Arthur—Shingle Mill.—W. D. Reeves states that he is not going to erect a shingle mill as was reported recently.

New Orleans—Grain Elevator.—The Illinois Central Railroad Co. (office, Chicago, Ill.) has let contract for the erection of the grain elevator which has been projected for some time. It will be built at Southport, and its capacity will be 300,000 bushels. About 750 feet of additional wharves will also be built, work on above to commence at once.

New Orleans—Steam Laundry.—The Swiss Steam Laundry Co. has been incorporated with a capital stock of \$20,000. R. A. Fox is president and manager, and E. D. Ellis, secretary and treasurer. The directors are the above and Frederick N. Peet.

Plaquemine—Sugar Mills, etc.—Andrew H. Gay, Anna M. Gay, John H. Gay, Jr., of San Diego, Cal.; Francis P. Butler, of St. Louis, Mo., and two others have incorporated the Edward J. Gay Planting & Manufacturing Co. to cultivate sugar cane, manufacture and refine sugar, etc. The capital stock is placed at \$500,000; its domicile is at the "St. Louis Plantation" in Iberville parish.

## MARYLAND.

Baltimore—Commission Company, etc.—John H. Crane, Robert W. Clarke and D. C. H. Burroughs, of Baltimore, Md., and Thos. J. Hodgson and Albin C. Chatham, of Philadelphia, Pa., have incorporated the Hodgson Commission Co. to sell grain stocks and provisions. The capital stock is \$25,000.

Baltimore—Distillery.—Albert Gottschalk, C. E. Warfield, Philip A. Albrecht, Albert E. Jacobs and Joseph Gottschalk have incorporated the Maryland Distilling Co. with a capital stock of \$100,000.

Baltimore—Land Company.—Edward H. Bouton, Rufus H. Rose, Albert S. Kemp, John N. Steele and Fred T. Dorton have incorporated the Forest Heights Co. with a capital stock of \$50,000.

Baltimore—Publishing Company.—Edwin F. George William, Arunah S. and Charles S. Abell and two others have incorporated the A. S. Abell Co. to publish the Baltimore daily and weekly Sun and conduct the Sun job printing office. The capital stock is \$300,000.

Frederick—Machinery Works.—W. H. Nicodemus, J. B. Solt, J. W. Gaver and Benjamin F. Reich have incorporated the American Power Fence Machine Co. for the purpose of manufacturing machinery for making wire fencing. Mr. Nicodemus is president; Jas. E. Solt, secretary, and J. B. Solt, general manager. The capital stock is \$10,000.

Frederick—Electric Light Plant.—Arthur L. Bosley, of Philadelphia, Pa., has obtained privilege from the city to erect an electric-light plant, erect poles, lay underground wires, etc., in Frederick.

Perryville—Water Works.—The Perryville Water Co., reported last week as incorporated, has purchased the rights and privileges of the Abraham's Mill property at Frenchtown, including the use of Mill creek, and will construct a system of water works to supply Perryville.

Ridgely—Basket Factory.—J. D. Ramsdell has removed his Denton basket factory to Ridgely.

Trappe—Creamery.—A stock company has been organized to erect a creamery. Contract for the machinery has been let and work on the buildings commenced.

Washington, D. C.—The Acme Gas Fuel Co., of Washington, has been incorporated in West Virginia. Its purpose is to purchase inventions for use in the United States, and its capital stock is \$5,000,000.

## MISSISSIPPI.

Clarksdale—Cotton Compress and Gin.—The Union Compress & Storage Co., having for its purpose the compressing and ginning of cotton, has been incorporated with a capital stock of \$100,000.

Coldwater—Saw Mill.—The Coldwater Logging & Railroad Co. is erecting a new band saw mill of 45,000 feet capacity daily at Passena.

Knoxville—Planing Mill.—H. G. Butler has placed a new fifty horse power automatic engine in his planing mill.

Pascagoula—Planing Mill.—The Farnsworth Lumber Co. will at once rebuild its planing mill and drying plant reported last week as burned. Dry kiln, planers and resaws have been purchased.

Sardis—Canning Factory, etc.—The Sardis Manufacturing & Canning Co. has been incorporated with a capital stock of \$5,000 for the purpose of canning fruits and vegetables and manufacturing wooden and tin articles.

## NORTH CAROLINA.

Asheville—Foundry and Machine Shop.—J. N. Rogers has purchased and is improving the Asheville Foundry and Machine Shops. New buildings will be added and the plant's capacity increased.

Charlotte—Flour Mill.—The committee has recommended the organization of a \$25,000 stock company to erect the flour mill recently mentioned. E. F. Young & Co. can give information.

Dillsboro—Planing Mill.—The Blue Ridge Lumber Co. will erect a planing mill.

Greensboro—Redrying Plant.—J. F. Jordan & Co. will put in machinery for redrying tobacco by steam.

Kings—Cotton Mill.—The stock company previously reported as organized to erect a cotton mill is known as the Enterprise Manufacturing Co.

Mt. Airy—Tobacco Factory.—The R. S. Gwyn Tobacco Co. has been organized and will erect a plug tobacco factory.

New Berne—Electric Light and Water Works.—William C. Clarke, of Wakefield, R. I.; Frank S. Arnold and Robert S. Fletcher, of Providence, R. I., and Richard P. Williams, of New Berne, have incorporated the New Berne Water, Electric Light & Railway Co. to build water and electric light works, etc. The capital stock is \$160,000.\*

Rocky Mount—Development Company.—The New South Development Co., recently reported as incorporated, has organized with L. V. Bassett, president; S. G. Hilliard, vice-president, and Geo. S. Sartin, secretary and treasurer. The company proposes to develop land lying adjacent to Rocky Mount, and offer inducements for the establishment of manufactures.

Tarboro—Ice Factory.—James H. Bell contemplates establishing an ice factory.\*

Tarboro—Cotton Mill.—A cotton mill may be built. N. M. Lawrence can give information.

Winston—Tobacco Factory.—F. Farrow will erect a tobacco factory at a cost of \$5,000.

Winston—Tobacco Factory.—J. O. W. Gravely is converting the farmers' warehouse into a leaf tobacco factory.

## SOUTH CAROLINA.

Charleston—Mining and Manufacturing.—The Ingleside Mining & Manufacturing Co. has increased its capital stock \$10,000.

Spartanburg—Rufus F. Hill, of Anderson; J. H. Morgan, of Greenville, and R. M. Bateman, of Spartanburg, have incorporated the Hill & Morgan Co. with a capital stock of \$15,000.

## TENNESSEE.

Chatanooga—Tobacco Factory.—J. M. Goad can give information concerning a tobacco factory to be established.

Dyersburg—Electric Light Plant.—The Dyersburg Water & Electric Light Co. will put in a new dynamo and engine.

Estill Springs—Corn Mill.—The Noel Mill Co., of Nashville, will erect a 500 barrel corn mill at Estill Springs.

Fort Pillow—Woodworking Factory.—J. H. Polsendorff & Sons, of Evansville, Ind., will, it is reported, erect a factory for manufacturing washboards and vehicle material at Fort Pillow.

Harriman—Tack Works.—The Harriman Tack Co. will add machinery for tin and brass capping trunk nails and tacks and machinery for making double pointed tacks and staples and for making wire brads; V. G. Farnham, manager.

Johnson City—Handle Factory.—Messrs. Miller & Carmichael will erect a handle factory. Machinery has been purchased.

Loudon—Lumber Mill's.—The Ketchum Lumber Co. will erect lumber mills at Loudon; information furnished by J. A. Greer.

Memphis—Canning Factory.—The Young Men's Business League has organized a stock company to establish a canning factory and has let contract for a \$7,000 plant. Its capacity will be 15,000 cans daily, and it will employ from 200 to 400 hands.



Memphis—Woodworking Plant.—C. T. Nelson & Co., of Columbus, Ohio, will establish a branch woodworking plant in Memphis. They manufacture poplar posts and pillars for building purposes.

Milan—Water Works.—A system of water works will be constructed. The secretary of the Commercial Club can give information.

Murfreesboro—Brick Works.—W. C. Henry contemplates putting additional machinery in his brick works.\*

Nashville—Corn Meal Mill.—Lanier & Burnett will erect a 2500-bushel mill for making fancy corn goods. Contract for the outfit of machinery has been let to the Edward P. Allis Co., of Milwaukee, Wis.

Nashville—Publishing Company.—The Banner Publishing Co. will increase its capital stock to \$100,000.

Ooltewah—Powder Mills.—The additional powder houses recently mentioned as being built by the Chattanooga Powder Co. will be equipped with new machinery.

Ripley—Saw Mill.—J. H. Polsendorff & Sons, of Evansville, Ind., have purchased and will operate J. T. Williams's saw mill.

Sharon—Canning Factory.—The canning company recently reported as chartered by J. C. Shannon and others is known as the Sharon Canning & Preserving Co.; E. L. Durham is secretary; capital stock \$10,000.

Trezevant—Corn Meal Mill.—J. F. Fuqua will erect a corn meal mill.

Troy—Corn and Flour Mill.—W. J. Meyers & Bro. have built a corn and flour mill.

Union City—Spoke Factory.—The Tennessee Spoke Co. has been incorporated and will erect an extensive plant for the manufacture of spokes. The company's president and general manager is W. H. Gardner; its secretary and treasurer, Adam Semones, and its capital stock \$30,000.

#### TEXAS.

Barstow—Canning Factory.—John McKillop, B. K. Brant, H. W. Woodrough and W. E. Gregory have incorporated the Excelsior Fruit Co. with a capital stock of \$30,000. Its purposes are to can fruit, etc.

Denison—Steam Laundry.—Mrs. E. J. Brown will establish a steam laundry.

Houston—Brick Works.—The Houston Tile & Brick Co., A. F. Morey, president, is building works for the manufacture of vitrified brick, fire-clay products, etc.

Paris—Flour Mill.—A. M. Laughlin will rebuild his Eagle Flouring Mills recently burned.\*

Rockwall—Cotton Oil Company.—B. B. Jones, I. D. Stroud, G. A. Truitt, L. L. Jackson and J. A. Hartman have incorporated the Rockwall Cotton Oil Co. with a capital stock of \$30,000.

Tyler—Cotton Company.—J. H. Brown, T. B. Floore and J. A. Brown have incorporated the Brown Cotton Co. with a capital stock of \$30,000. This company's purpose is to buy and sell cotton by wholesale.

Waxahachie—Flour Mill.—R. B. Moffatt's new flour mill, recently reported, will have a capacity of 200 barrels. Contract for the machinery has been awarded to the Edward P. Allis Co., of Milwaukee, Wis.

#### VIRGINIA.

Advance Mills—Flour Mill.—J. M. Fray & Co. will remodel their flour mill to the one-break system. Improvements all contracted for.

Alexandria—Foundry, Ship-yards, etc.—George L. Sheriff, of Washington, D. C., has purchased the properties of the Virginia Iron Ship-Building Co. at Alexandria for \$25,000, including Smith & Perkins' foundry, Hunter's ship-yard and a 60-year lease on the Pioneer Mills.

Brookneal—Saw Mill.—Graves & Hubbard have started a saw mill. They have contracted with the Lane Manufacturing Co., of Montpelier, Vt., for new sett works.

Charlottesville—Sewerage.—The city will hold an election next November at which will be considered the issuance of \$80,000 worth of bonds for sewerage purposes. The mayor can give information.

Culpepper—Flour Mill.—The Culpepper Milling Co. will erect a 125-barrel flour mill. Charles Forbes is the company's president; C. R. Rixey, treasurer, and J. T. Nalls, general manager; capital \$6,000.

Gilmore's Mills—Flour Mill.—W. H. Chiles is greatly improving his flour mill, including the putting in of new rollers.

Luray—Flour Mill.—John C. Grove has let contract for the erection of a 9x18 Barnard double roller flour mill.

Orange—Flour Mill.—The Orange Manufacturing Co. may erect a flour mill.

Richmond—Iron Works.—Chamblin, Delaney & Scott are erecting an ironworking establishment.

Roanoke—Wood Novelty Works, etc.—The Roanoke Wood Novelty Co. is now placing the machinery in its plant. The company has decided also to equip for all kinds of fine mill work.

Staunton—Iron Foundry.—B. F. Stockdon & Bro. will enlarge their foundry building to about twice its present size, and put in a new furnace.

Sweet Chalybeate—Implement and Wagon Works.—Brooks & Richter will establish works for the manufacture of wagons, wheelbarrows, farming implements, etc.\*

Timberville—Flour Mill.—C. Driver & Co. will erect a roller flour mill. Contract for the outfit has been placed with the Case Manufacturing Co., of Columbus, Ohio.

Warrenton—Electric-light Plant.—The erection of an electric-light plant is contemplated. For information address H. C. Yates.\*

#### WEST VIRGINIA.

Kanawha City—Coal Mines, etc.—The Columbia Barb Wire and Nail Works has been incorporated to mine coal, manufacture ores, etc. The capital stock is placed at \$300,000.

Huntington—Furniture Factory.—J. M. Depew may, with a number of associates, establish a \$300,000 furniture factory.

Martinsburg.—The Edison Electric Illuminating Co. will add a new engine and dynamo to its plant.

Moundsville—Shoe Factory.—The committee recently mentioned as endeavoring to establish a shoe factory will doubtless succeed in organizing a concern to be known as the Moundsville Shoe Manufacturing Co. Subscriptions to the stock are now being solicited. J. Glenn Cook can give information.

New Cumberland—Electric-light Plant.—The Cumberland Light, Heat & Power Co. will add two 750-Westinghouse alternating dynamos to its plant.

Weston—Electric-light Plant.—The Weston Electric Light, Power & Water Co. will put in new dynamos.

#### BURNED.

Baltimore, Md.—Chatterton & Co.'s furniture factory.

Baltimore, Md.—Greene & Co.'s brass foundry; loss \$30,000.

Brookhaven, Miss.—The Norwood & Butterfield Co.'s plant.

Eagle Lake, Fla.—Cates & Long's saw and planing mill; loss \$6,000.

Idaho, N. C.—George Hall's saw mill; loss \$10,000.

Lexington, Ky.—W. J. Loughridge's hemp factory.

Morgantown, W. Va.—The Tygarts Manufacturing Co.'s planing mill.

Paris, Texas.—The National Oil Mills; loss \$25,000.

Richmond, Ky.—D. H. Myers's planing mill; loss \$5,000.

Shreveport, La.—Whited, Wheelless & Co.'s dry-kiln; loss about \$2,800.

Warren, Texas.—The Warren Lumber Co.'s dry-kiln; loss estimated at \$12,000.

#### BUILDING NOTES.

Alvin, Texas.—Carlton Bros. will erect a business building.

Annapolis, Md.—Courthouse.—James Revell will receive bids until August 18 for remodeling the Anne Arundel county courthouse. Jackson C. Gott, of Baltimore, prepared the plans.

Baltimore, Md.—M. U. Smith & Son have awarded contract to Joseph Schamberger for a \$10,000 business building. Louis J. Ginter prepared the plans.

Bellevue, Ky.—Church.—Louis Piket, of Cincinnati, Ohio, has prepared plans for a \$35,000 edifice for the Church of the Sacred Heart. It will have a 195-foot tower with a clock.

Bridgetown, Fla.—Mrs. S. J. Duckwall will erect a two-story hall and store building.

Catonsville, Md.—Griffin & Randall, of New York city, have prepared plans for a granite and stone residence for B. N. Baker.

Chipley, Fla.—Dr. Farrior will erect a brick block.

Dalton, Ga.—Depot.—Plans and specifications have been completed and approved of for the new depot to be built in Dalton by the Western & Atlantic Railroad (office, Atlanta).

Darlington, S. C.—Warehouse.—The Darlington Tobacco Co. will erect a warehouse 45x150 feet, and a two-story business building 40x60 feet.

Easley, S. C.—Hotel.—A stock company will, it is stated, soon be formed to build a hotel.

El Paso, Texas.—Hospital.—Caples & Hammer have contract for building the Hotel Dieu Hospital, mentioned in last issue. E. Krause prepared the plans, and the cost will exceed \$43,000.

Edenton, N. C.—Church.—A church will be built. Rev. W. R. Proctor can give particulars.

Fernandina, Fla.—Hotel, etc.—A 100-room hotel and twenty cottages will probably be built at Strathmore Beach. S. A. Swann can give particulars.

Fort Smith, Ark.—School Building.—Contract

has been awarded to Mr. Hoffman at \$3,375 for the school building lately mentioned. Rickon & Thompson, of Little Rock, prepared the plans.

Hot Springs, Ark.—Burgauer & Felhimer will erect a business building.

Huntington, W. Va.—Hotel.—F. J. Harmison, of Baltimore, has purchased the Florentine Hotel and will probably enlarge it.

Kenova, W. Va.—Depot.—The erection of a two-story brick and stone union depot 50x60 feet for the Norfolk & Western and the Chesapeake & Ohio will soon begin. Superintendent Durges will direct the work.

Knoxville, Tenn.—Baumann Bros. will, it is stated, furnish plans for a five-story brick and stone storehouse for Miss Margaret Hayes.

Jacksonville, Fla.—Club Building.—The Seminole Building Association will erect a three-story club building, to have electric lights, elevator, hot-water heating, etc., and cost about \$35,000. Joseph H. Durkee can give particulars.

Lawrenceville, Va.—Bank Building.—P. I. Bostick will receive proposals until August 16 for erecting a two-story brick bank building 25x50 feet, with fireproof vault.

Little Rock, Ark.—McAllister & Harper have been awarded contract at \$9,741 for the erection of a building for the Confederate Soldiers' Home.

Little Rock, Ark.—Office Building.—Gibb & Breyascher are preparing plans for a three-story office building 115x45 feet.

Little Rock, Ark.—Church.—The members of the Third Baptist Church intend building an edifice. C. H. McGuire can be addressed.

Louisville, Ky.—Depot.—An expenditure of \$30,000 is contemplated for new buildings and improvements at King College.

Louisville, Ky.—Depot.—The Pennsylvania Railroad Co., which controls the Jeffersonville, Madison & Indianapolis Railroad, will build a brick and stone freight depot 34x70 feet in Louisville. It will cost about \$50,000. H. B. Taylor, resident engineer, can be addressed.

Macon, Ga.—Church.—Architect Kennerly, of Anniston, Ala., is preparing plans for the new edifice for the Mulberry Street Methodist Church, mentioned in last issue. Rev. J. P. McFerrin can give particulars.

Memphis, Tenn.—Club Building.—F. Zimmerman, 177 Main street, invites competitive plans for a three-story club building 60x148½ feet to cost not more than \$35,000.

Murphy, N. C.—Warehouse.—The Murphy Tobacco Warehouse Co. will shortly commence building a warehouse.

Nashville, Tenn.—The Banner Publishing Co. will erect a new building.

Natchez, Miss.—Opera-house.—The Masons have awarded contract to Frank Cox, of New Orleans, La., at \$19,000 for completing the interior of their opera-house and temple.

New Orleans, La.—Bank Building.—The State National Bank has purchased three buildings and will remodel them for its business.

Richmond, Va.—Church.—The Baptists will build a church at Gwathmey. C. B. Gwathmey can give particulars.

Salem, N. C.—Fogle Bros. have been awarded contract to erect a three-story building 20x30 feet at the Salem Female Academy.

San Antonio, Texas.—Alfred Giles will furnish plans for a store and office building for W. H. Maverick. Nelson Mackey will also erect a store and office building.

Tampa, Fla.—The Gulf Building Co. has been chartered by A. H. Johnson, J. G. Fraser and others to erect buildings. The capital stock is \$10,000.

Wheeling, W. Va.—Office Building.—Wood Bros. have secured contract for the four-story brick and granite office building for the Peabody Insurance Co., lately mentioned. It will be 50x110 feet, and have fire-escapes, etc. Leiner & Farris prepared the plans, and the estimated cost is \$40,000.

Winston, N. C.—Church.—Gustaf Bottiger prepared the plans for a church for the Augsburg English Lutheran congregation. It will be 48x76 feet and cost about \$7,000.

#### RAILROAD CONSTRUCTION.

Alexandria, La.—Railroad.—The Alexandria & St. Louis Railway Co. has been chartered by F. G. Haddon, John P. Parker, L. D. McLain, A. C. Hough, W. A. Bright, R. B. Blanks and I. J. Newton, all of Monroe. The road is to extend from a point on the State line between Louisiana and Arkansas, in Morehouse parish, southwesterly through Morehouse, Ouachita, Caldwell, Catahoula, Grant and Rapides parishes to Alexandria. A branch line from Monroe to the Louisiana and Texas State line is also contemplated. The capital stock is \$3,300,000.

Bartow, Fla.—Street Railway.—R. W. Price, of Dayton, Ala., will organize a company to build a street railway in Bartow.

Bowie, Texas—Railroad.—The sub-contracts for building the Chicago, Rock Island & Texas

Railroad from Bowie to Red river, where it will meet the Chicago, Rock Island & Pacific, are held by W. F. Callahan, Crane Bros., C. Murphy, M. Neely & Co., Sheridan Bros. and Captain Wear. The grading is expected to be completed within sixty days.

Cherry Run, W. Va.—Railroad.—The preliminary survey of the Cherry Run & Potomac Valley Railroad, which is designed to furnish the Baltimore & Ohio a new route between Cherry Run and Harper's Ferry, has been completed. If the road is built it will be used by the Baltimore & Ohio for heavily loaded east bound freight trains so as to avoid a grade of eighty feet to the mile on its present line below Cherry Run.

Conroe, Texas—Railroad.—The Texas, Louisiana & Eastern Railroad Co. has contracted for rails and equipment. The road is graded east from Conroe for eighteen miles, and seven miles of rails are laid. The rails ordered will lay twelve miles additional.

Cumberland, Md.—Electrical Railroad.—The Cumberland Electric Railway Co. is arranging for the extension of its road to the west side.

Dalark, Ark.—Railroad.—The Ultima Thule, Arkadelphia & Mississippi Railway Co. has completed survey for its extension from Dalark via Fairview and Halley Springs to Millville, twenty-five miles. N. S. Woods, of Arkadelphia, is chief engineer.

Dalton, Ga.—Dummy Line.—A company has been formed with F. T. Reynolds, president, and P. B. Trammell, vice-president, to build a standard gauge dummy line from Dalton to Spring Place, Ga. Second hand light rails are to be used.

Denison, Texas—Railroad.—B. S. Wathen, resident engineer at Dallas of the Texas & Pacific Railway, has received instructions to prepare estimates of cost for completing the Denison, Bonham & New Orleans Railroad from Denison to Bonham. The line is graded between the two points.

Durham, N. C.—Electrical Railroad.—An electrical railroad will probably be built.

Fordsville, Ky.—Railroad.—The Owensboro, Falls of Rough & Green River Railroad Co. (office, Owensboro) has awarded contract for its 16-mile extension from Fordsville to a connection with the Newport News & Mississippi Valley at Horse Branch.

Hoxie, Ark.—Railroad Bridge.—The Hoxie & Pocahontas Railroad Co., lately mentioned as awarding contract for building its road from Hoxie north via Pocahontas to the Missouri State line, a distance of thirty-five miles, will build a railroad bridge across Black river.

Irvine, Ky.—Railroad.—A committee appointed to formulate a plan either for the completion of the Richmond, Nicholasville, Irvine & Beattyville Railroad between Irvine and Beattyville, or its reorganization, will report at a meeting of bondholders to be held in Louisville August 13.

Johnson City, Tenn.—Railroad.—William Kenefick writes in reference to the statement, lately mentioned, that contracts had been awarded to himself and others to complete the Charleston, Cincinnati & Chicago Railroad from Johnson City to Minneapolis, Va., that the report is correct, but no special time has been fixed for the commencement of work, although it will no doubt begin some time during September.

Mobile, Ala.—Electrical Railroad.—An ordinance has been introduced in the city council authorizing the Mobile Electric Railway Co. to build an electrical railroad on Jackson, Manasses, Hamilton and Beauregard streets.

New Berne, N. C.—Electrical Railroad.—The New Berne Water, Electric Light & Railway Co. will build the electrical railroad previously noted, and for which William C. Clark, of Wakefield, R. I., has franchise. Mr. Wakefield is one of the organizers of the company.

New Iberia, La.—Railroad.—C. Klef, of San Antonio, Texas, has contract for grading the New Iberia & Vermillion branch of the Southern Pacific from near New Iberia to Abbeville.

Norfolk, Va.—Electrical Railroad.—A movement is on foot to build an electrical railroad from Norfolk to Willoughby Spit.

Owensboro, Ky.—Railroad.—The Owensboro & West Louisville Railroad, mentioned in last issue, has been surveyed and right of way obtained, but will not be built this year. The road is to run from Owensboro to Beech Grove, a distance of twenty miles. R. S. Triplett can be addressed.

Oxford, N. C.—Railroad.—The dispute over the subscription by the town to the Oxford Coast Line Railroad Co. has been compromised by the reduction of the amount from \$40,000 to \$30,000, and it is stated that construction will soon begin.

Smithville, Texas—Railroad.—Bu Kitt, Burns & Co., of Palestine, write that they have contract to build the Missouri, Kansas & Texas Railroad (office, Denison) from Smithville to Lockhart, a distance of thirty-six miles, and contract is not yet let for the extension from Boggy Tank to Houston. F. W. Pratt, of Houston, chief engineer, can be addressed for further details.

Southport, N. C.—Railroad.—H. H. Dougherty, president of the Southport Construction Co.,

lately reported, writes that the company is formed to build the Brunswick, Western & Southern Railroad and to build docks at Southport. Contracts for ties and balance of grading have been let, and the company hopes to have the road in operation about December 1.

Standing Stone, Tenn.—Railroad.—The Nashville & Knoxville Railroad Co. (office, Lebanon), which is building its road to Standing Stone, has, it is stated, let contract for a section east of that place.

Titusville, Fla.—Railroad.—Lewis McLain and R. P. Paddison have contracts on the southern end of the extension of the Jacksonville, St. Augustine & Halifax River Railroad lately mentioned. The contract of G. R. Healy, lately mentioned, covers 12 miles of the road.

Traders' Hill, Ga.—Railroad.—Brooks Bros. & Co. have located their standard gauge logging railroad and are pushing the construction of same. Conner & Higginbotham, of Callahan, Fla., have been awarded contract for cross-ties. The road will be in operation by December 1.

Vicksburg, Miss.—Electrical Railroad.—R. C. McFarland, J. P. Roach and J. B. Mattingly, of Vicksburg, and E. F. Fuller, of New York, have petitioned the city council for a franchise to build an electrical railroad. They propose to begin work within 60 days and complete the line in eight months from date of franchise. The Hill City Railroad & Electricity Co., referred to in last issue, will also apply for a similar privilege.

Washington, D. C.—Railroad.—The Maryland & Washington Railroad Co., previously reported as incorporated by the Maryland legislature to build a railroad from Laurel, Md., to Washington, has also obtained a charter from Congress.

Washington, D. C.—Railroad.—The Washington & Chesapeake Beach Railway Co. has let contract for building its railroad from Washington to Chesapeake Beach, previously reported, to Neale & Co., of Pittsburg, Pa. L. H. Hyer, chief engineer, Loan and Trust Building, can give particulars.

West Point, Ky.—Railroad.—The Louisville, St. Louis & Texas Railway Co. (office, Louisville) has, it is stated, decided to build a bridge across Salt river near West Point and connect with the Louisville & Nashville near South Park, reaching Louisville by the latter's tracks.

### MACHINERY WANTED.

If you desire to purchase machinery of any kind consult our advertising columns, and if you cannot find just what you wish, send us particulars as to the kind of machinery needed. We will make your wants known free of cost, and in this way secure the attention of machinery manufacturers throughout the country. You will thus get all information desired as to prices, etc.

Bark Mill.—H. M. White, Ore Bank, Va., will need machinery for bark mill.

Boiler.—J. H. Polsdorfer & Sons, Evansville, Ind., will buy a 60 horse-power boiler in a few months.

Boiler.—The Ludlow Electric Light, Power & Manufacturing Co. will buy two 100 horse-power boilers. Address J. J. Weaver, Ludlow, Ky.

Boiler and Engine.—H. La Grande, Athens, Ala., wants price on a one or two horse-power boiler and engine.

Boilers.—Jno. N. Adams, 606 N. 10th street, Richmond, Va., wants a 100 horse-power locomotive boiler complete and a 100 horse-power horizontal return tubular boiler.

Boiler and Engine.—R. S. Reinhardt, secretary and treasurer Elm Grove Cotton Mills, Lincoln, N. C., wants a second hand boiler and engine, 10 to 15 horse-power, at once.

Box Machinery.—The Page Lumber Co., Aberdeen, N. C., wants information as to the cost of full outfit of machinery for manufacturing boxes.

Brick Pulverizing Machinery.—W. C. Henry, Murfreesboro, Tenn., contemplates buying pulverizing machinery for grinding brick clay.

Cars.—Brooks Bros. & Co., Traders' Hill, Ga., will want ten or fifteen logging cars, standard gauge, to be shipped to Boulogne, Fla., by rail or to Fernandina by schooner.

Castings, etc.—Brooks & Richter, Sweet Chalybeate, Va., want addresses of manufacturers of spring boxes and other castings.

Dump Cars.—Jno. N. Adams, 606 N. 10th street, Richmond, Va., wants sixteen new or second hand dump cars to tip both sides and run on rails.

Electric-light Plant.—H. C. Yates, Warrenton, Va., desires to correspond with concerns that are prepared to install electric-light plants.

Electric-light Plant.—The Ludlow Electric Light, Power & Manufacturing Co. will buy a 100 horse-power electric light plant, one-half arc and one-half incandescent. Address J. J. Weaver, Ludlow, Ky.

Engine.—Jno. N. Adams, 606 N. 10th street, Richmond, Va., wants a 50 horse-power centre crank plain slide valve engine.

Engine.—The Titusville Electric Light Co., Titusville, Fla., expects to put in a 150 horse-power condensing compound engine.

Flour Mill.—A. M. Laughlin, Paris, Texas, will purchase outfit for flour mill.

Gang Edger.—S. Strickland, Jolly Bay, Fla., will put in a gang edger.

Handle Factory.—H. M. White, Ore Bank, Va., will need machinery for handle factory.

Ice Factory.—The Madison County Canning Co., Madison, Ga., will want machinery for a 2 ton ice factory; second-hand outfit would answer purpose. Address W. H. Halsey, secretary.

Ice Factory.—Jas. H. Bell, Tarboro, N. C., desires to correspond with manufacturers of machinery for ice factory.

Ice Machine.—The Ludlow Electric Light, Power & Manufacturing Co. will probably buy a 5-ton ice machine. Address J. J. Weaver, Ludlow, Ky.

Locomotive.—Brooks Bros. & Co., Traders' Hill, Ga., will want one 20 or 25-ton standard gauge locomotive to be shipped to Boulogne, Fla., by rail or to Fernandina by schooner.

Metal-working Machinery.—The F. A. Neider Co., Augusta, Ky., will buy some special machinery for working sheet metal.

Nut Blank Machinery, etc.—D. B. Daniels, Lake Charles, La., wants to correspond with manufacturers of nut blank and split key machinery.

Nut-tapping Machine.—The F. A. Neider Co., Augusta, Ky., will want a nut-tapping machine.

Piping, etc.—The Thomsen Gold Mining Co., Glenn Springs, S. C., is in the market for spiral riveted pipe and a giant.

Planing Mill Machinery.—The Lynn Lumber Co., Fort Lynn, Ark., will purchase planing mill machinery in the near future.

Rails.—Jno. N. Adams, 606 N. 10th street, Richmond, Va., wants two miles of 16-pound rails or self-laying or movable rails.

Rails, Spikes, etc.—Brooks Bros. & Co., Traders' Hill, Ga., want eight miles of 30 or 35-pound new or second-hand iron or steel rails, also spikes, etc.

Stave and Spoke Factory.—H. M. White, Ore Bank, Va., will need machinery for stave and spoke factory.

Tank.—Jno. N. Adams, 606 N. 10th street, Richmond, Va., wants a 10,000 gallon wooden tank.

Tobacco Factory.—H. Clark & Sons, Statesville, N. C., will need machinery for a tobacco factory.

Turpentine Stills.—R. M. Ong, New Orleans, La., will likely want two turpentine stills.

Vehicle Works.—The Buckeye Cart Co., Charleston, W. Va., will purchase outfit of machinery for vehicle works.

Vinegar and Pickle Factory.—The Madison County Canning Co., Madison, Ga., will want machinery for a pickle and vinegar factory. Address W. H. Halsey, secretary.

A. L. Blanchard, of Hillsboro, Texas, wants to buy a hook and ladder truck.

Geo. W. King, of Hampton, Va., desires address of axle and wheel material manufacturers.

J. G. Baskerville, of Charlotte, N. C., wants to purchase a steam power merry go-round.

The Southern Malleable Iron Co., of Chattanooga, Tenn., wants prices on large tumbling barrels.

The Paige Lumber Co., of Aberdeen, N. C., wants to correspond with dealers in boxes of different kinds.

W. E. Genn, of Camden, S. C., wants price on 90 barrels of cement of a standard brand delivered at Camden.

Wm. P. Craigbill, Baltimore, Md., will receive proposals until August 23 for dredging a channel from the main ship channel to Curtis Bay.

The Frederick (Md.) Brick Works, one of the city's new and thriving industries, has received contract to furnish 500,000 paving brick from the District of Columbia commissioners.

ORDERS have been placed recently with Russell & Co., of Atlanta, Ga., to supply a 150 horse power automatic engine and two seventy five horse-power boilers for E. Van Winkle & Co., of Atlanta, and a fifty horse-power automatic engine for H. G. Butler, of Knoxville, Miss.

The Golley & Finley Iron Works, of Lima, Ohio, are just completing a large tar still ten feet diameter by twenty one feet long for the Century Oil Co., of Lima. This is the third one of these dimensions they have put in for this company within the past fourteen months.

A FAVORABLY situated lumber plant in good order will be sold by Dewey Bros., of Goldsboro, N. C. It includes planing mill, saw mill, 2 room dry-kiln, two planers, resaw, gang edger, etc., and has been in operation about two years. A 4-mile tram road, with locomotive and cars, also go with the mill property. The whole cost \$20,000, and will likely be sold at a bargain.

### SOUTHERN FINANCIAL NEWS.

#### New Banks.

Charlotte, N. C.—The bank of Heath Bros. will be converted into either a national or a savings bank with a capital stock of \$100,000. The capital stock is at present \$50,000.

Gordonsville, Va.—The Central Virginia Collection Agency & Banking Co. will be formed.

Americus, Ga.—The Bank of Sumter has declared a semi-annual dividend of 5 per cent.

Austin, Texas.—The Panhandle Loan & Trust Co., of Henrietta, has amended its charter, changing its place of business to Austin.

Baltimore, Md.—The Columbian Building Association has been chartered by Eldridge Packham, T. F. McNulty and others. The capital stock is \$50,000.

Baltimore, Md.—The Lake Roland Elevated Railway Co. has decided to issue \$1,000,000 of 50-year 5 per cent. gold bonds.

Bedford City, Va.—The First National Bank has declared a semi-annual dividend of 4 per cent.

Birmingham, Ala.—The Birmingham Investment & Abstract Co. has been chartered by J. G. Crews, J. B. Ware, L. L. Buck and others. The capital stock is \$5,000.

Bristol, Tenn.—The city will shortly issue \$40,000 of bonds to subscribe to the capital stock of the Bristol, Elizabethton & North Carolina Railroad.

Buena Vista, Va.—The Buena Vista Co. has executed a mortgage on its property, with the Provident Life & Trust Co., of Philadelphia, as trustee, to secure an issue of \$250,000 of 6 per cent. gold bonds.

Charlottesville, Va.—The issuance of \$25,000 of school bonds, \$50,000 of sewer bonds and \$20,000 of street improvement bonds will be voted on at the general election in November. They are to be 30-year 5 per cent. bonds.

Charlestown, W. Va.—An election will be held on August 18 to consider the issuance of \$5,000 of bonds.

Covington, Va.—The Cincinnati, Newport & Covington Railway Co. has executed a mortgage on all its property to the Farmers' Loan & Trust Co., of New York city, to secure an issue of \$3,000,000 of gold bonds. This company was formed by the union of the South Covington & Cincinnati, Cincinnati & Newport, Newport & Dayton and the Covington & Rosedale Street Railways.

Galveston, Texas.—The People's Loan & Homestead Co. has declared a semi-annual dividend of 4 per cent.

Greenville, Miss.—The assets of the Bank of Greenville, previously noted as making an assignment, have been turned over to G. T. Thomas, who was appointed receiver to succeed W. A. Pollock.

Huntington, W. Va.—The Mountain State Building and Loan Association has been chartered by G. A. Flading, W. W. Adams and others.

Louisville, Ky.—The Columbian Fire Insurance Co. will be organized with W. P. D. Bush, president.

Louisville, Ky.—The Fidelity Trust & Safety Vault Co. has declared a quarterly dividend of 2 per cent.

Millersburg, Ky.—The Hurst Home Insurance Co. has been chartered.

Nashville, Tenn.—It is stated that the State has sold \$1,500,000 of 15 year 4 per cent. bonds at par. The proceeds are to be devoted to retiring outstanding 6s, 5½s and 5s.

Nashville, Tenn.—The Banner Publishing Co. has amended its charter securing authority to issue new bonds and to retire outstanding bonds.

Oxford, N. C.—The town will issue \$20,000 of bonds to subscribe for a like amount of the capital stock of the Oxford Coast Line Railroad Co.

San Antonio, Texas.—The San Antonio Water Works Co. will issue \$650,000 of first mortgage 6 per cent. bonds to retire outstanding bonds bearing interest at 7 and 10 per cent. The San Antonio Loan & Trust Co. is trustee of the mortgage.

Simpson, W. Va.—The Simpson Building and Loan Association has been chartered by Dr. J. A. Findley, C. M. Davis, J. B. Fleming and others.

Temple, Texas.—It is stated that the controller of the currency has declared a first dividend of 30 per cent. in favor of the creditors of the Bell County National Bank, which suspended January 30.

Tyler, Texas.—The Citizens' Loan Co. has been chartered by John Durst, H. H. Rowland, H. B. Marsh and others. The capital stock is \$15,000.

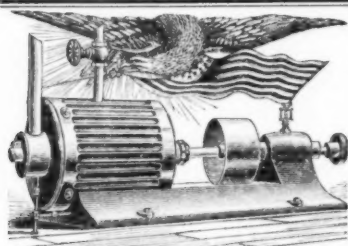
Vinton, Va.—The Vinton Land, Loan & Building Co. has declared a dividend of 25 per cent.

The New York Stock Exchange has listed \$3,282,000 of the Elizabethton, Lexington & Big Sandy Railroad Co.'s first mortgage 6 per cent. gold bonds of 1902, the interest of which is reduced to 5 per cent.

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1 En. Lathe, 8 ft. bed, 21 in. swg., Worcester mke.  
1 26 in. Stevens' Pulley Lathe.  
1 Automatic Rack-Cutting Machine.  
1 General Bar Iron Shears, cuts 4x1½ in.  
1 15 in. stroke Friction Shaper.  
1 16 in. stroke Heavy Crank Shaper.  
1 475 lbs. Merrill Patent Drop Hammer.  
1 38 in. Back Gear New Haven Drill.  
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## SOUTHERN LUMBER DIRECTORY.

## A List of Leading Lumber Dealers and Manufacturers in the South.

This list of representative Southern lumber merchants and manufacturers is published for the benefit of those who desire to reach responsible houses in this branch of business in the South. Readers of the MANUFACTURERS' RECORD who have occasion to correspond with any of the firms mentioned below will confer a favor by mentioning this paper.

## Yellow Pine.

I. E. Gordon & Co., Alpine, Ala.  
Villa Rica Lumber Co., Anniston, Ala.  
J. R. Adams & Sons, Birmingham, Ala.  
Hawkins & Smith, Birmingham, Ala.  
C. T. Hughes & Co., Birmingham, Ala.  
Riddle & Simpson, Birmingham, Ala.  
Southern Supply Co., Birmingham, Ala.  
Marbury & Jones, Bozeman, Ala.  
D. W. & U. Blacker, Brewton, Ala.  
W. W. Weaver, Castleberry, Ala.  
J. A. Dudley, Clanton, Ala.  
O. A. Duke, Clanton, Ala.  
L. B. Wells, Clanton, Ala.  
H. C. Higman & Co., Decatur, Ala.  
Dunham Lumber Co., Dunham, Ala.  
Gadsden Lumber Co., Gadsden, Ala.  
Tuscaloosa Lumber Co., Hull, Ala.  
Bay City Lumber Co., Mobile, Ala.  
E. B. Vaughan, Mobile, Ala.  
Alabama Lumber Syndicate, Montgomery, Ala.  
S. B. Allen & Co., Montgomery, Ala.  
W. A. Drives & Co., Montgomery, Ala.  
Moore, Kirkland & Co., Montgomery, Ala.  
Wagar Lumber Co., Wagar, Ala.  
W. W. Wadsworth, Wadsworth, Ala.  
Arkadelphia Lumber Co., Arkadelphia, Ark.  
Empire Lumber Co., Ashton, Ark.  
Long Bell Lumber Co., Buckner, Ark.  
Cotton Belt Mill Co., Cotton Belt, Ark.  
Eagle Lumber Co., Eagle Mills, Ark.  
Red River Lumber Co., New Lewisville, Ark.  
J. A. Neimeyer Lumber Co., Waldo, Ark.  
Fordyce Lumber Co., Fordyce, Ark.  
The Florida Phosphate Co., Ltd., Phosphoria, Fla.  
J. S. Betts & Co., Ashburn, Ga.  
Donalson Lumber Co., Donalsonville, Ga.  
Ocean Springs Lumber Co., Ocean Springs, Miss.  
Perkins Manufacturing Co., Augusta, Ga.  
Stillwell, Millen & Co., Savannah, Ga.  
F. F. Putney, Hardaway, Ga.  
Charles Bewick & Co., Hazlehurst, Ga.  
Alderfer & Bull, Isabella, Ga.  
Hogan & Winger, Kensington, Ga.  
J. A. Williams, Sumner, Ga.  
A. J. Duncan & Co., West Bowersville, Ga.  
W. E. Mayne, Carpenter, Ky.  
P. Hendrickson, Conant, Ky.  
Perkins & Miller Lumber Co., Ltd., Westlake, La.  
Lock-Moore & Co., Ltd., Westlake, La.  
R. J. Aycock, Longstreet, La.  
C. P. Brasher, Marthaville, La.  
Joseph Horst, Maugansville, Md.  
Elliott, Crawford & Co., Myrtle, Miss.  
P. B. Myers & Son, Myrtle, Miss.  
B. J. Cansey, West, Miss.  
Cary E. Spence, Pass Christian, Miss.  
Keystone Lumber & Imp. Co., Bogue Chitto, Miss.  
Page Lumber Co., Aberdeen, N. C.  
The Greenville Land & Imp. Co., Greenville, N. C.  
Guilford Lumber Mfg. Co., Greensboro, N. C.  
The A. F. Withrow Lumber Co., Millboro Depot, Va.  
U. B. Simpson & Son, Naruna, Va.

## North Carolina Pine.

Goldshoro Lumber Co., Goldshoro, N. C.  
G. Vyne & Son, Wilkesboro, N. C.  
John Hickson & Co., Lynchburg, Va.

## Cypress.

Morris & England, Keo, Ark.  
Cypress Lumber Co., Sherrill, Ark.  
T. O. Wilson Lumber Co., Tillar, Ark.  
Nuchner & Brown, Peach Orchard, Ark.  
Moline Lumber Co., Helena, Ark.  
J. M. Milburn & Bro., Greenway, Ark.  
J. C. McCain, Greenway, Ark.  
Lawless & Kyle, Franklin, La.  
Louisiana Cypress Lumber Co., Harvey, La.  
Lutcher & Moore Lumber Co., Lutcher, La.  
Callahan & Lewis Mfg. Co., Patterson, La.  
W. R. Emerson, Emerson, Fla.  
J. C. Burleigh, Midland, Fla.  
F. S. Ramberg, Jasper, Fla.  
S. J. Temple, Temple's Mills, Fla.  
J. P. Little, Sumner, Fla.  
Geo. H. Barker, Waldo, Fla.  
A. A. Bunnell, Raulerson, Fla.  
Windemere Land & Lumber Co., Windemere, Fla.  
Kelly, Cosby & Co., Jug Tavern, Ga.  
Dietrich & Dopson, Lenox, Ga.  
W. T. McArthur, McArthur, Ga.  
W. H. Moxley & Co., Macon, Ga.  
W. R. Peterson & Co., Wadley, Ga.  
McEwen & Murray, New Orleans, La.  
Hanson & Smith, Wilmington, N. C.  
J. C. Fulton, Aransas Pass, Texas.  
Calcasieu Lumber Co., Austin, Texas.  
M. T. Jones & Co., Childress, Texas.  
J. H. Folkey, Koryville, Texas.

## Hardwoods.

Martin & Vaughan, Bellefonte, Ala.  
North Alabama Lumber Mfg. Co., Bridgeport, Ala.  
Bridgeport Lumber Co., Bridgeport, Ala.  
Hill & Mitchell, Center Star, Ala.  
W. A. Koepfel, Coaling, Ala.  
Decatur Lumber Co., Decatur, Ala.  
H. S. Freeman, Decatur, Ala.  
Black Warrior Lumber Co., Demopolis, Ala.  
Alabama Lumber & Mfg. Co., Gurley, Ala.  
C. G. Huffman, Hollywood, Ala.  
Clifton & Hendrix, Jasper, Ala.  
Elliott & Carter, Jasper, Ala.  
W. M. Beatty, Austin, Ala.  
J. W. Ray, Arkadelphia, Ark.  
Desha Lumber Co., Arkansas City, Ark.  
Batesville Lumber Co., Batesville, Ark.  
Russell & Elder, Beebe, Ark.  
South Hardwood Lumber Co., Black Rock, Ark.  
E. M. Ford Land & Timber Co., Gilmore, Ark.  
Kelley & Wells Lumber Co., Newport, Ark.  
Cream City Lumber Co., Lamberthville, Ark.  
J. M. Meffert, Lowell, Fla.  
Ray & Geise, Bronwood, Ga.  
Altamaha Cypress Lumber Co., Brunswick, Ga.  
Montford & Mitchell, Butler, Ga.  
Glasgow & Henderson, Cassville, Ga.  
Green & Eshum, Clay Hill, Ga.  
W. H. Allen, Cordele, Ga.  
Greer Bros., Ada, Ga.  
D. T. Harris, Dixon, Ga.  
W. T. Opie, Dover, Ga.  
A. J. McMullen, Hartwell, Ga.  
Matthews & Anderson, Knoxville, Ga.  
R. W. Ballard, Newton Factory, Ga.  
O. W. Wadley, Rogers, Ga.  
L. T. Brawner, Adairville, Ky.  
G. W. Hummer, Adairville, Ky.  
W. Conn & Son, Bedford, Ky.  
Snider Bros., Berea, Ky.  
Gibson & Hale, Flat Lick, Ky.  
J. L. Naylor, Wickliffe, Ky.  
Samuel Anglen, Lafayette, Ky.  
H. E. Miller, Lewisburg, Ky.  
Fetter Cochran & Co., Louisville, Ky.  
J. C. Williamson, Mouth of Pond, Ky.  
The Cumberland Co., Middlesborough, Ky.  
Waters & Bringham, Pineville, La.  
J. H. McBride, Winnfield, La.  
The Loomis & Hart Mfg. Co., Chattanooga, Tenn.  
Smith & Co., Reedy Ripple, W. Va.  
Shelly & Wirgman, Romney, W. Va.

## Shingles.

A. C. Danner, Mobile, Ala.  
J. Bradley, Hartsell's, Ala.  
Conecuh & Patsaliga Lumber Co., Luverne, Ala.  
G. N. Buchanan, Luverne, Ala.  
J. D. Cameron & Son, Mobile, Ala.  
Mobile Shingle Co., Mobile, Ala.  
Mountain & Sons, Mobile, Ala.  
C. G. Richards & Son, Mobile, Ala.  
Stewart & Butt, Mobile, Ala.  
Gulf States Lumber Co., Montgomery, Ala.  
D. Goulet & Co., Black Rock, Ark.  
F. McKay, Black Rock, Ark.  
Camden Shingle Mill Co., Camden, Ark.  
Price Lumber Co., Paragould, Ark.  
Carey & Ollinger, Bagdad, Fla.  
A. L. Wellman & Co., Beresford, Fla.  
Florida Shingle Mills, Brooksville, Fla.  
W. Springstead & Son, Brooksville, Fla.  
Mearns Shingle Mill, Davenport, Fla.  
Wm. A. McCann, Jacksonville, Fla.  
A. G. Russel, Oviedo, Fla.  
Little & Chapman, Rosewood, Fla.  
P. G. Grant, Atlanta, Ga.  
T. E. Collier, Cordele, Ga.  
King & Bursch, Hawkinsville, Ga.  
Yarbrough & Perry, Fullington, Ga.  
Ino. Akers & Co., Scotland, Ga.  
Baily Bros., Toccoa, Ga.  
Mayfield Shingle Co., Wishart, Ga.  
Worth Lumber Co., Worth, Ga.  
G. W. Clerc, Coalton, Ky.  
Monroe Smith, McKinney, Ky.  
The J. H. Poe Shingle Co., Lake Charles, La.  
Harris & Thornton, Chattanooga, Tenn.  
L. Miller Shingle Co., Orange, Texas.  
Kizer Lumber Co., Texarkana, Texas.  
Fritz Sitterding, Richmond, Va.  
Gurley & Rogers, Norfolk, Va.  
Nottingham & Wrenn, Norfolk, Va.  
Ino. L. Roper Lumber Co., Norfolk, Va.

## Staves and Heading.

F. W. Sharp & Co., Larkinsville, Ala.  
J. R. Adams & Son, Longview, Ala.  
Montgomery Stave & Bldg. Co., Montgomery, Ala.  
J. C. Sheets & Co., Montgomery, Ala.  
P. V. Deland, Black Rock, Ark.  
Hammett & Bailey Stave Co., Greenway, Ark.  
Arkansas Stave Works, Greenway, Ark.  
J. F. Hasty & Son, Paragould, Ark.  
G. M. Rosegrant, Paragould, Ark.  
Wilson Bros., Piggott, Ark.  
Backus Bros., Pine Bluff, Ark.  
Little Rock Cooperage Co., Little Rock, Ark.  
Tampa Lumber Co., Tampa, Fla.  
Hagan & Platt, Pine Level, Fla.  
R. H. Brewer, Cedartown, Ga.  
Georgia & Tennessee Lumber Co., Laconte, Ga.  
F. H. Waring & Co., Cement, Ga.  
Allen & Briggs, Bardwell, Ky.  
F. B. Freeman, Cumberland Falls, Ky.  
Johnson & Overshiner, Hopkinsville, Ky.  
T. H. Meehan, Louisville, Ky.

J. G. Evans & Co., Moorehead, Ky.  
Tippett & Co., Moorehead, Ky.  
Edward Farley, Paducah, Ky.  
Lester & Little, Sloans Valley, Ky.  
Pinnell & Webb, Somerset, Ky.  
George D. Eike, New Orleans, La.  
E. O. Felton, Ronceverte, W. Va.  
J. Beckwith & Co., Waverly, W. Va.

## Railroad Ties.

W. J. Felt, Greenup, Ky.  
G. & A. Kopp, Louisville, Ky.  
Southern Tie & Lumber Co., Louisville, Ky.  
James S. Pope, Halls, Md.  
P. L. Conquest & Co., Norfolk, Va.

## Spokes and Handles.

Jacob Wise & Son, Fulton, Ky.  
Paducah Handle Works, Paducah, Ky.  
Hendersonville Mfg. Co., Hendersonville, N. C.  
Rutherfordton Sp. & Hdl. Fy., Rutherfordton, N. C.  
C. J. Dundas, Statesville, N. C.  
Thomasville Spoke Works, Thomasville, N. C.  
Johnson Bros., Brownsville, Tenn.

## Southern Real Estate Directory.

For the convenience of the many readers of the MANUFACTURERS' RECORD it has been deemed advisable to collect under this head a reliable list of Real Estate Agencies of the Southern States. The value of such a list for the purpose of Ready Reference will immediately become apparent to all who are interested in the growth of this section.

## DISTRICT OF COLUMBIA.

WASHINGTON, D. C.—Chas. A. McEwen, Real Estate, Loans and Insurance. 1420 F. St.

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SAVANNAH—Jackson & Whitley, Counselors at Law. Real Estate and Collection Department. W. G. Woodfin, manager.

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ROCKY MOUNT—Geo. S. Martin, Town Lots, Acre Property, Farms.  
NORTH WILKESBORO—W. F. Trogdon, Town Lots and Farm Lands.  
OLD FORT—O. H. Blocker, Real Estate, Timber and Mineral Lands.  
RALEIGH—J. M. Broughton & Co., Real Estate, city and country realty.  
STATESVILLE—P. C. Carlton, Real Estate, Timber and Mineral Lands.  
WINSTON—E. R. Amls, Real Estate. First-class investments a specialty.

## SOUTH CAROLINA.

COLUMBIA—Geo. W. Parker & Co., Real Estate and Insurance. Loans Negotiated.  
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MEMPHIS—Hodge & Bro., 59 Madison St., Real Estate Agents and Dealers.

## VIRGINIA.

CHARLOTTEVILLE—J. C. McKennie & Co., Real Estate and Insurance Brokers.  
NEWPORT NEWS—W. E. Barrett & Co., Real Estate & Ins. Correspondence solicited.  
NEWPORT NEWS—Cottrell & Fitzsimmons, Real Estate. Correspondence invited.  
NORFOLK—A. W. Cornick & Co., Real Estate Agents, 102 Main Street.

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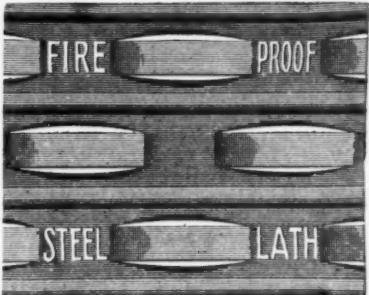
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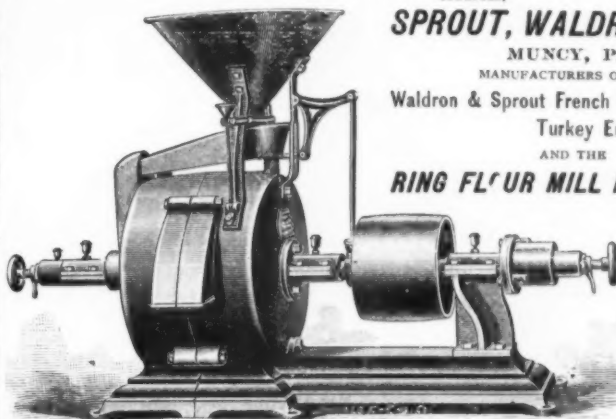
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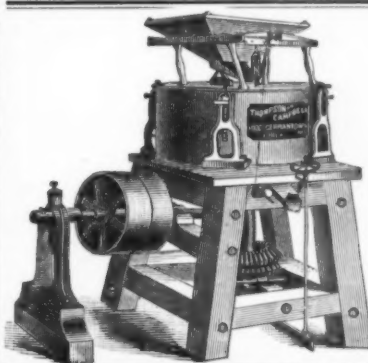
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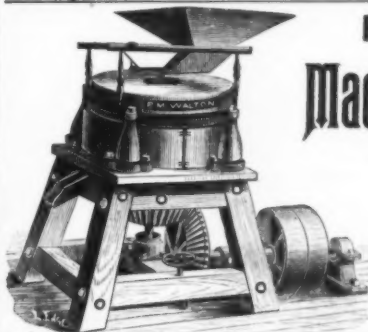
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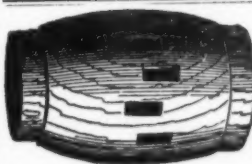
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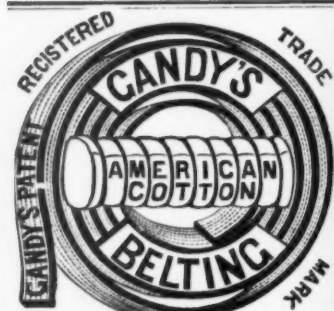
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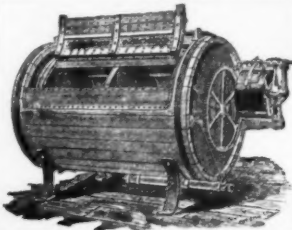
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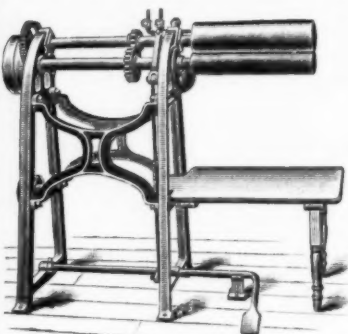
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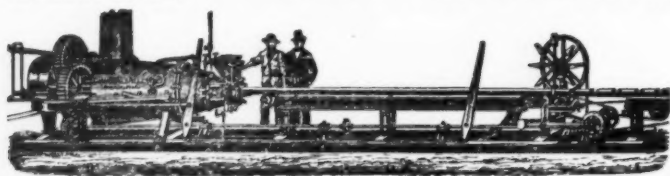
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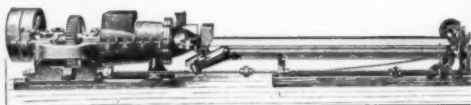
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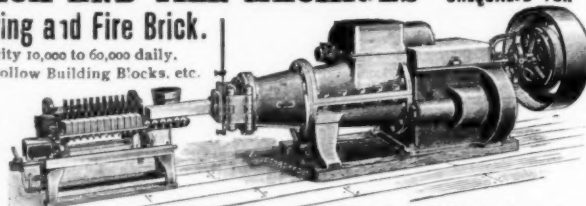
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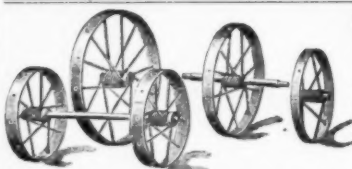
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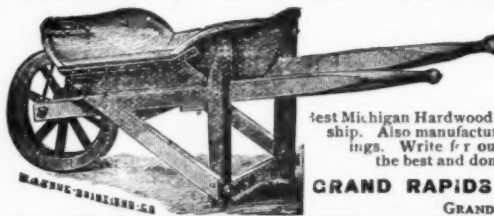
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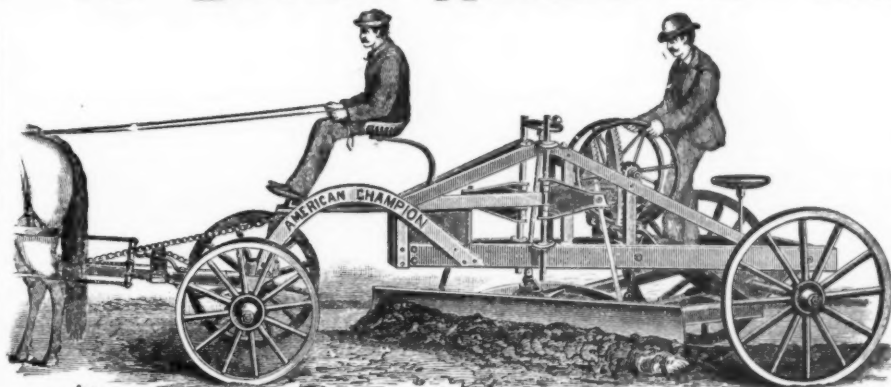


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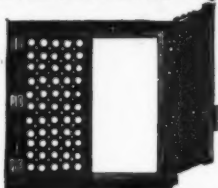
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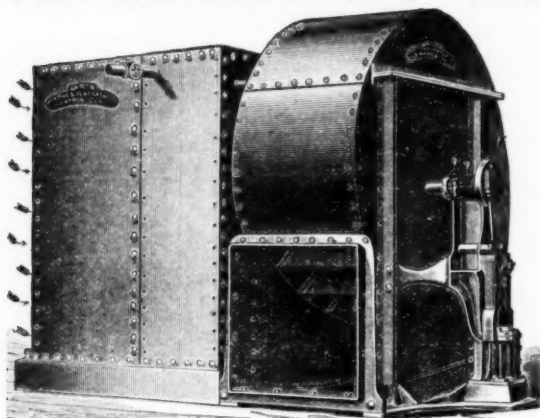
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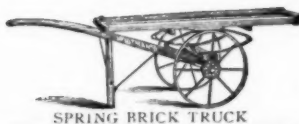


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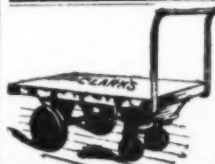
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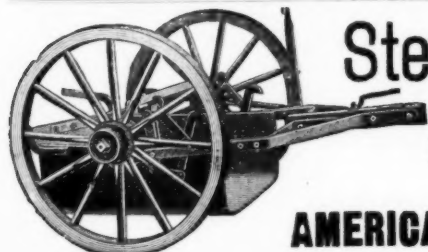


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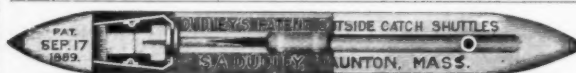
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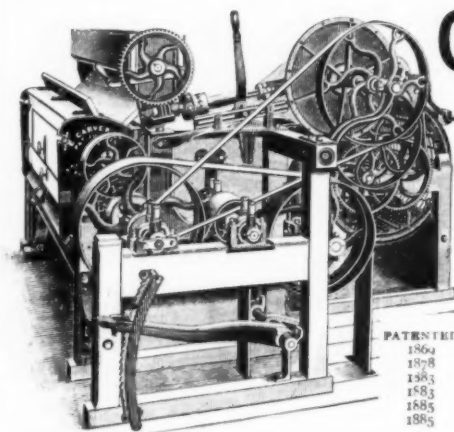
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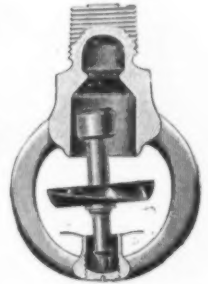
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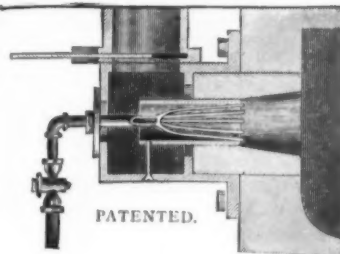
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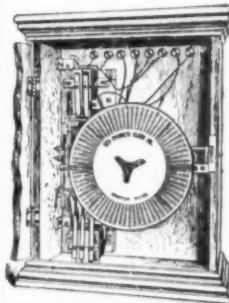
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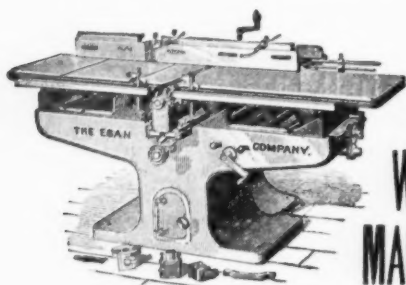
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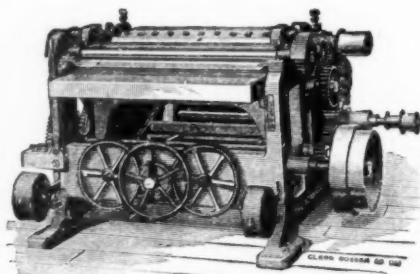
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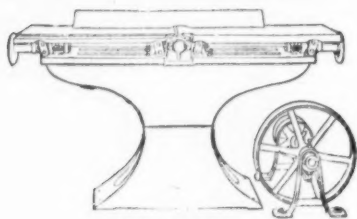


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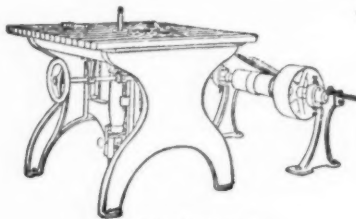
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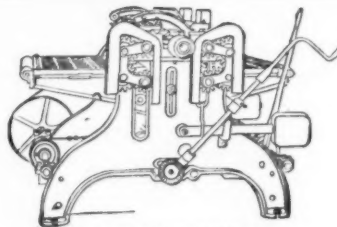
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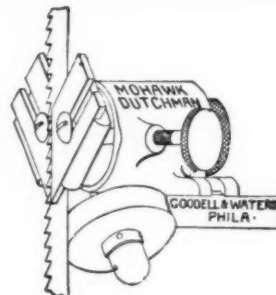
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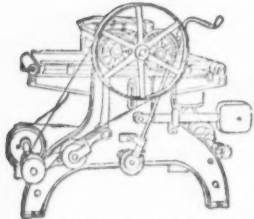
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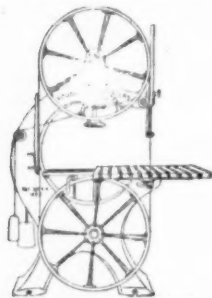
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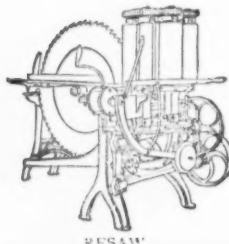
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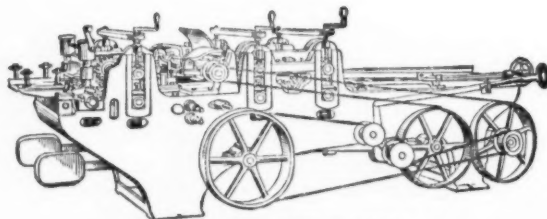
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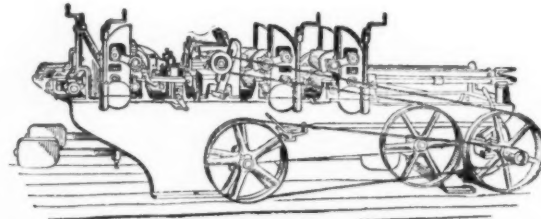
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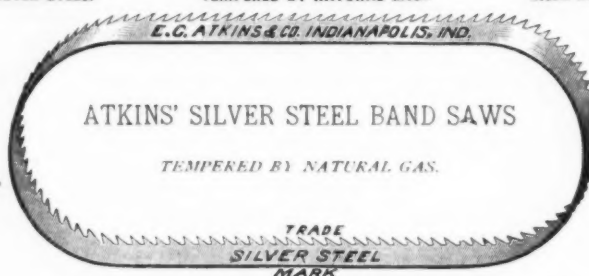
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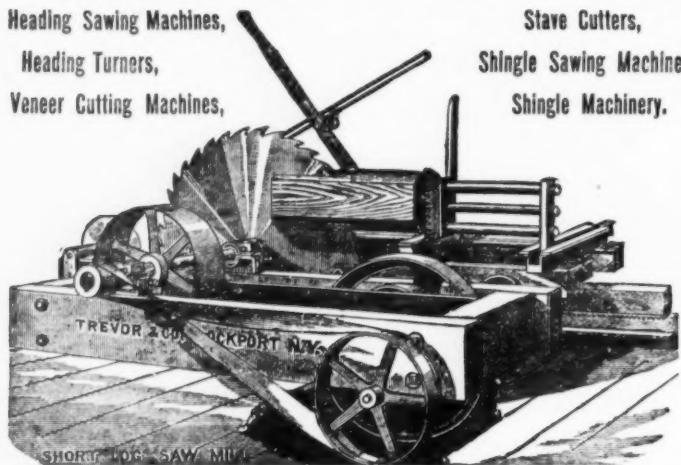
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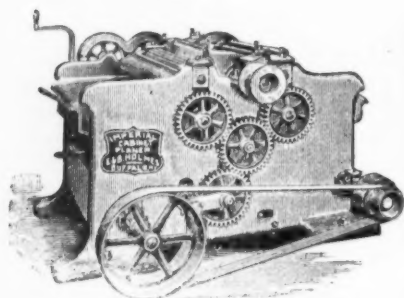
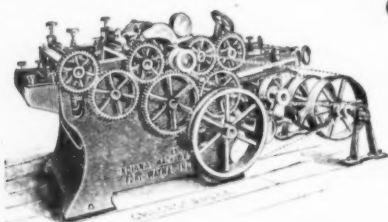
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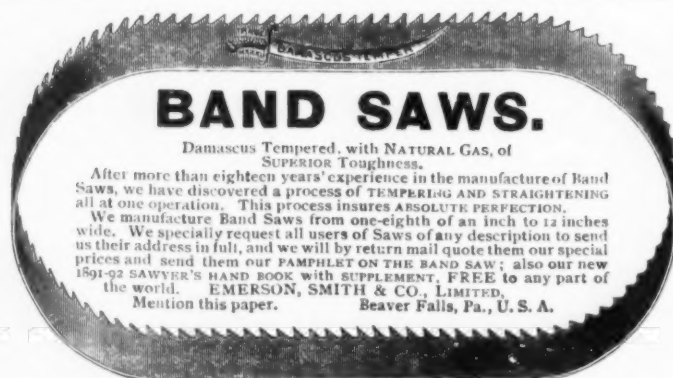
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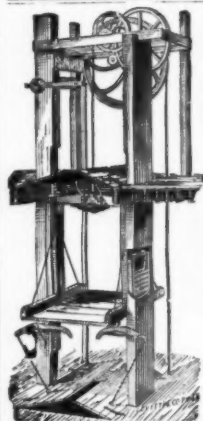
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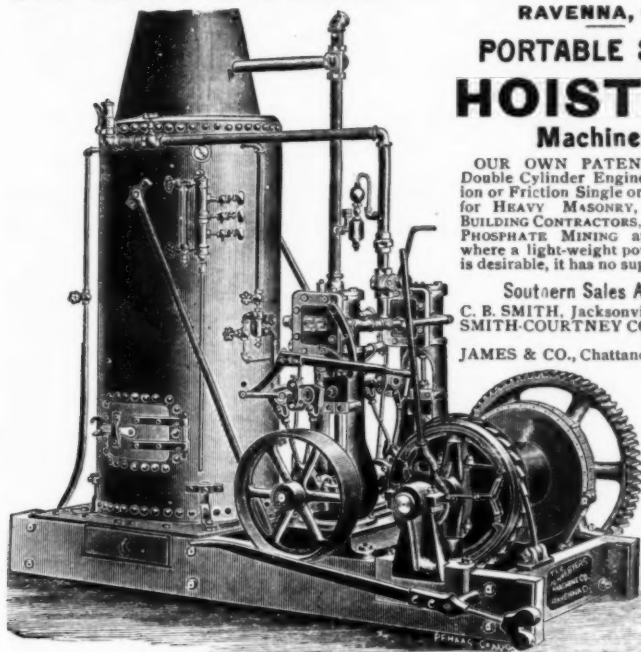
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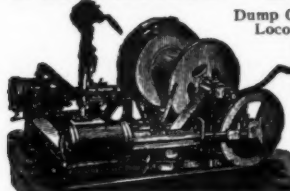
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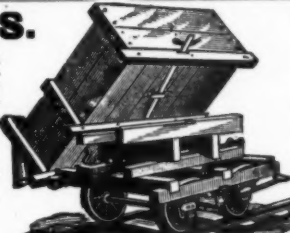
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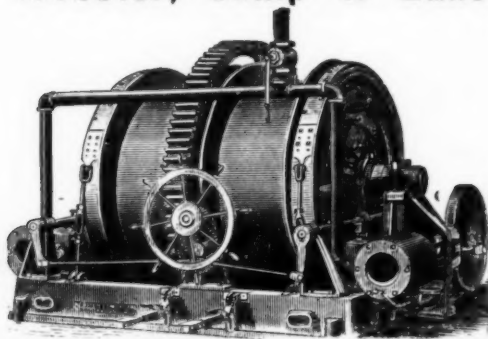
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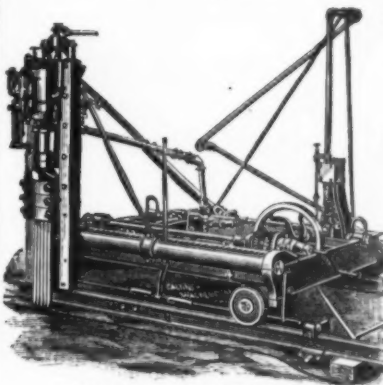
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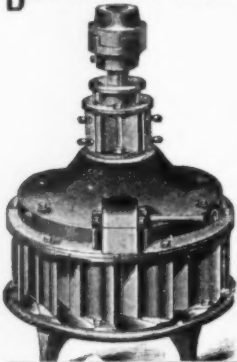
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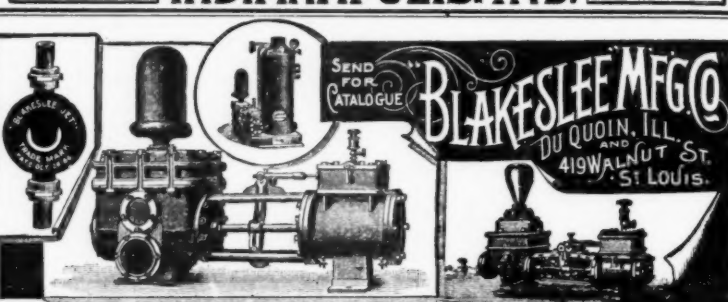
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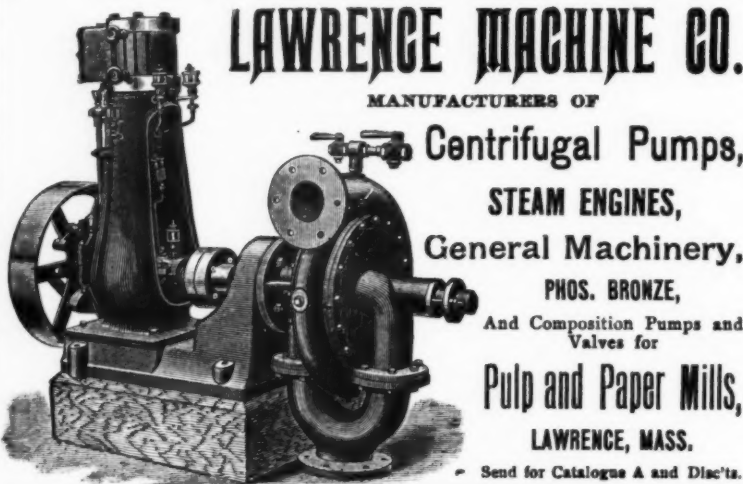
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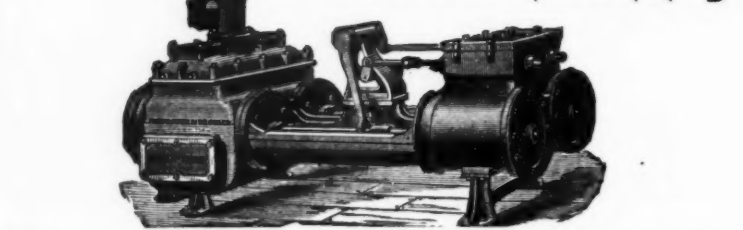
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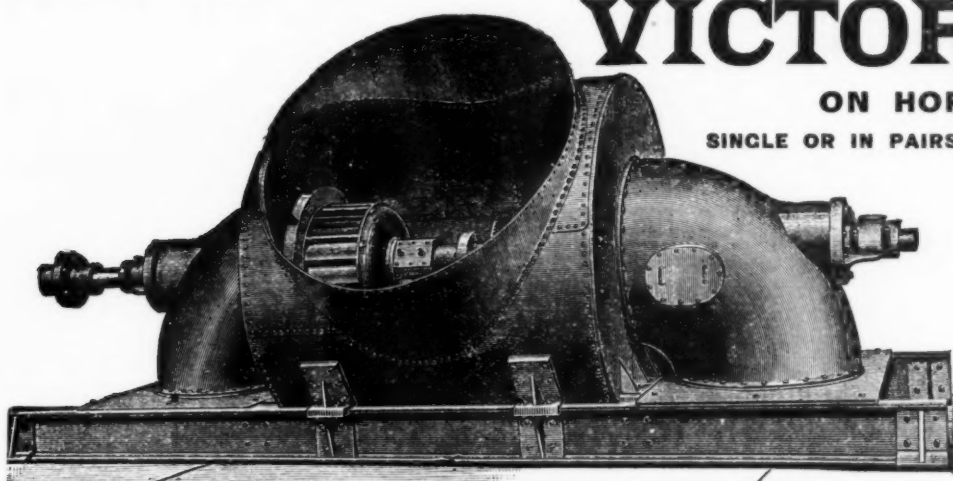
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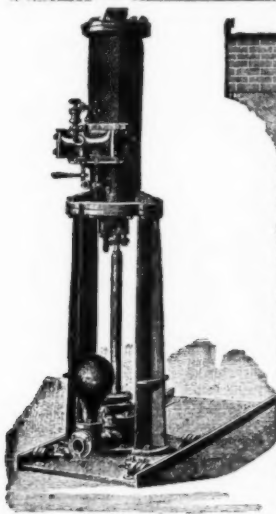
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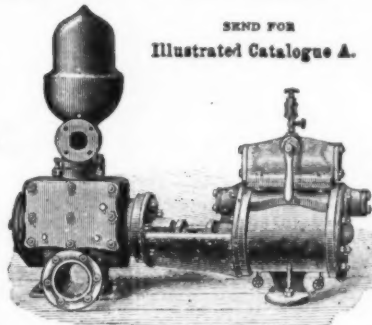
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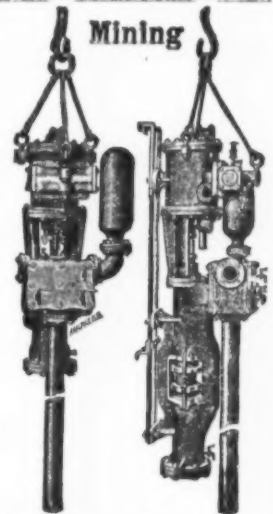


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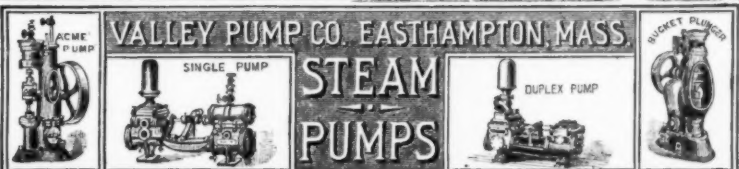


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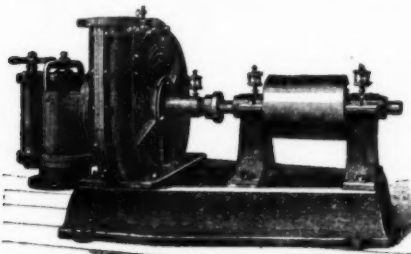
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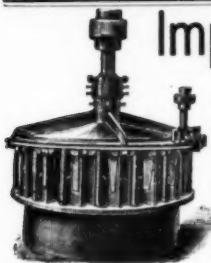
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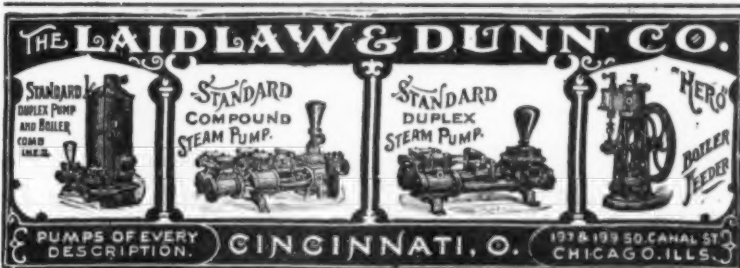
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 FRIDAY at 3 P. M. Fare—First class, \$15.00;  
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 Baltimore TO JACKSONVILLE, Fla.—First  
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 All tickets include meals and stateroom accom-  
 modations. Through tickets sold and baggage  
 checked to all points South.  
 For sailing schedules and other information,  
 apply to  
 A. L. HUGGINS, Agent,  
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 No. 216 Water Street, Baltimore, Md.

## THE SOUTH BALTIMORE HARBOR & IMPROVEMENT COMPANY.

THE SOUTH BALTIMORE HARBOR & IMPROVEMENT CO.  
 is the owner of about 1,500 acres of land and five miles of water front  
 adjoining the city of Baltimore, on the south side of the Patapsco river.

### LOCATION.

The land is beautifully located, running from the water's edge,  
 gradually to a height of about 200 feet; is free from malarial influences,  
 and is generally considered one of the healthiest locations adjoining  
 the city.

### WATER FRONT.

The center of the water front consists of the famous land-bound  
 harbor of Curtis Bay, with an average depth of water of 25 feet.

### MANUFACTORIES.

The advantages of this locality for manufacturing purposes cannot  
 be over-estimated. The best proof of this assertion is that capitalists  
 have within the last few years selected it in preference for large manu-  
 facturing enterprises, such as a Sugar Refinery, Barrel Factory, Car  
 Works, Foundry, Nut and Bolt Manufactory, the Ryan-McDonald  
 Machine Shops, which were removed from Waterloo, N. Y.; the Beck-  
 with Rolling Mills, which were removed from Paterson, N. J., besides  
 others now in contemplation of erection.

### LABOR.

The great advantage of this place as to labor, is the town of  
 SOUTH BALTIMORE, adjoining the factories, containing hun-  
 dreds of substantial brick houses, for the employees of these various  
 works. (There are now being built by the Company, as well as by  
 others, blocks of houses, in addition to the above.)

## MACHINERY! MACHINERY! NEW AND REBUILT, { LOWEST RATES OF FREIGHT OBTAINED

In endless variety, fully described, with prices annexed, in our catalogues as below specified.  
 Catalogues No. 50-A and 50, New and Rebuilt Machine Shop and Blacksmith Equipment.  
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 Send us stamps for catalogue, stating exactly what class of machinery you require, and in what  
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**DO YOU NEED?**  
 A CUT OF ANY KIND  
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## THE PREMIER FLOUR OF AMERICA.

Patapsco Flouring Mills.

ESTABLISHED 1774.

Perfection in Flour.

Patapsco Supertative Patent,

THE PREMIER FLOUR OF AMERICA,

Is unsurpassed for

BREAD, BISCUIT OR PASTRY.

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Patapsco Superlative Patent,

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Orange Grove Extra,

Baldwin Family.

### BALTIMORE & OHIO R. R. CO.

The Baltimore & Ohio Railroad runs through this property, and has  
 a terminus at Curtis Bay.

### ELECTRIC RAILWAY.

An Electric Railway is now completed from the City of Baltimore to  
 the Sugar Refinery (near the southern limits of this property), the fare  
 upon which will be only five cents, the cars to be run every ten minutes,  
 and thereby making it a part of Baltimore City, as well as easy of access  
 at all hours.

### CHURCHES.

The town contains a Presbyterian, a Catholic, a Methodist, a Baptist  
 and an Episcopal Church.

### BUILDING LOTS.

Capitalists and Builders to erect houses in this growing town, both  
 for sale or to rent, will find a rare opportunity for investment: as the  
 demand for houses is greater than the supply.

The Company will sell or lease water fronts, or lots for manufactur-  
 ing and for dwelling purposes, at moderate rates.

Manufacturers will find it to their interest to examine this property  
 before locating elsewhere.

For particulars and prices, apply to

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PATENT SPECIALTIES  
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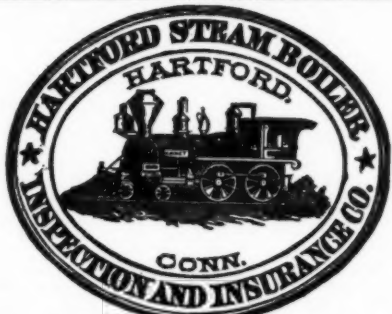


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Patent Punches and Tools for Manufacturing  
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ing Machine for Welding Tires  
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&c. Woodruff Eave Trough Hangers, Conductor Hooks, Ice  
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**GEO. W. HEARTLEY, Proprietor, 432 St. Clair St., TOLEDO, O., U. S. A.**  
Also Manufacturer of MILL PICKS and STONE CUTTERS' TOOLS.



**Issues Policies of Insurance after Careful Inspection  
of the Boilers, covering Loss or damage to prop-  
erty, and Loss of Life and Personal Injury**

—ARISING FROM STEAM BOILER EXPLOSIONS.

Full information concerning the plan of the Company's operations can be obtained at the  
COMPANY'S OFFICE, Hartford, Conn., or at any Agency.

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## Rocky Mount, THE QUEEN CITY OF THE NORTH CAROLINA, GOLDEN LEAF TOBACCO BELT,

**Offers greater Inducements to the Manufac-  
turer, Investor and Home-Seeker than  
any other place in the South.**

Situated on one of the great arteries of commerce and at the converging  
point of a number of important railroads; IMMENSE RAILROAD SHOPS  
building; the most complete railroad yards in the United States; the dis-  
tributing point of the great Atlantic Coast Line system; in easy connection  
with the great trade centers of America; large tobacco warehouses and  
leaf factories in the midst of the best tobacco and general agricultural  
country in North Carolina; with grand water powers for manufacturing  
purposes, and the raw materials at our doors, she stands pre-eminent  
among the strong and vigorous towns of the New South.

## The Rocky Mount Improvement and Manufacturing Co.

A SYNDICATE OF PENNSYLVANIA CAPITALISTS,

Who have already invested in Rocky Mount, and are arranging for still  
larger investments, invite all those who contemplate moving to or investing  
their money in the South, to correspond with them. Address,

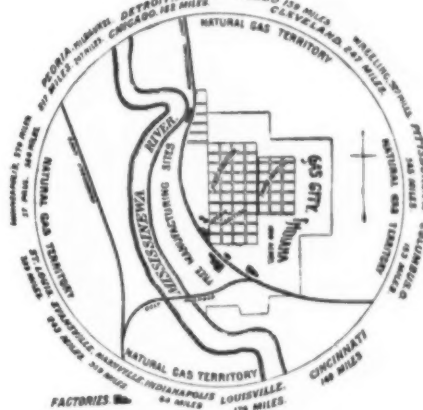
## Rocky Mount Improvement and Manufacturing Co.

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# GAS CITY, INDIANA.

**The Safest, Most Inviting and Profitable Field for the Prudent  
Investment of Capital in the United States.**



**WITHIN 300 MILES ARE TWENTY MILLION CONSUMERS.**

**ALL ACCESSIBLE BY THE GREATEST, MOST PERFECT AND  
BEST EQUIPPED RAILWAY SYSTEMS IN THE WORLD.**

The lands owned by the Gas City Land Co., of Gas City, Ind., are located in

## The Heart of the Largest Natural Gas Fields in the world.

The site of the Largest Tin Plate works in the World, and destined to  
become the Focal Point and Manufacturing and Industrial  
Distributing Center of the Central and Great  
Western States of the Union.

**E. MOOREHEAD & CO.'S Tin Plate Plant,**  
of Wales, Great Britain, covering 52 acres, cost-  
ing \$1,000,000, employing 2,000 persons, together  
with SEVEN other Manufactories, employing  
over 1,000 persons, located and now being built  
at Gas City, Ind., upon lands given FREE by  
The Gas City Land Company, assuring an  
almost

Immediate Population of 10,000.

All Records to Date Broken.

Unparalleled Developments.

A Great Manufacturing and Industrial Dis-  
trict—defined, developed and established in little  
more time than is represented by one Calendar  
Month.

**400 DWELLINGS, Business and Store**  
Houses required to be erected prior  
to January 1, '93. Seventy Houses per Month  
to be built. And all based upon the great fact  
that The Gas City Land Company gives to  
Manufacturers, of an approved class, perma-  
nently locating in Gas City, Indiana,

**PERPETUAL FREE LANDS and  
FREE RAILROAD SWITCHES.**

**PERPETUAL FREE NATURAL GAS,  
PERPETUAL FREE WATER,**

**PERPETUAL FREE LEASE ON  
NATURAL GAS TERRITORY.**

Assuring a positive, rapid and permanent Indus-  
trial Growth, that guarantees to Investors of  
every grade in Gas City Real Estate

**500 Per Cent. Profit on All Purchases of Lots Made Now in the  
First and Second Additions to Gas City, Indiana.**

**20 Per Cent. Net Profit Realized from Rental Property.  
Rents Guaranteed by Manufactories.**

**Liberal Discounts and Special Inducements to Purchasers  
Building from Five to Ten Houses.**

**Building Materials of All Kinds Abundant and at Very Low-  
est Prices.**

You can buy Real Estate for the first time ever subdivided into lots and offered for sale. You  
buy at first prices, established after subdivision into lots from First Hands, and as First Buyers,  
those who purchase now must be the first to realize the Immense Profits certain to accrue from  
the scope and method of operations adopted and now daily applied by THE GAS CITY LAND  
CO. for developing and maintaining a city destined to and now rapidly becoming

### A GREAT INDUSTRIAL CENTER AND MANUFACTURING DISTRICT.

**ALL RAILROAD FARES PAID BY PERSONS VISITING GAS CITY AND PURCHASING  
ONE OR MORE LOTS WILL BE REFUNDED OUT OF THE  
FIRST CASH PAYMENT.**

Send your address for Maps, Price List, Terms of Sale, Pamphlets and Descriptive Publica-  
tions containing detailed particulars. Sent Free. Address

## THE GAS CITY LAND CO.

Gas City, Grant County, Indiana.

Gas City is Surrounded by the Indiana Natural Gas, Coal and Oil Fields.

# NORTH WILKESBORO,

## NORTH CAROLINA,

One of the Conspicuous Successes of the Year in Town Building.  
Presents the Following Record:

Population March 4, 1891, actual count, 48.

Population March 4, 1892, actual count, 348.

Gain in one year 625 per cent.

Townsite purchased November 11, 1890; act of incorporation passed by the Legislature, March 4, 1891; first lot sold at private sale, May 12, 1891. Within the first year of its existence ten miles of streets have been graded, and \$22,000 spent in public improvements. Where prior to March 4, 1891, there was only a farm settlement without pretensions to being even a village, there is to-day a thriving, busy, growing, trading and manufacturing center, with

A Large Well-Kept Hotel,  
The Bank of North Wilkesboro, \$40,000 Capital,  
A large Livery and Sale Stable,  
Two Large Wholesale Stores,  
One Hardware Store,  
One Furniture Store,  
Ten General Merchandise Stores,  
Three Saw Mills, Sash and Blind Factories,  
One Foundry and Machine Shop,  
A Handsome, Well-Edited, Home Print Newspaper, The North Wilkesboro News,  
One School,  
Two Churches Under Way,

Two Brick Yards in operation, and a number of other enterprises practically secured.

Arrangements are about completed for a Woolen Mill.

A large iron front brick block, containing Bank Building, two Store Rooms, Opera House, and Printing Office; A graded School Building and an Iron Bridge across the Yadkin River, in the Eastern part of town, will be completed during the spring and summer.

Turnpike roads to Tennessee and Virginia are about completed; county roads leading into town are being improved and numerous good new ones built, with the intention of making this the center for all the wagon trade of this section.

A tobacco warehouse for the sale of the high grade leaf of this district will be built during the summer, so as to give a home market for the tobacco crop that will be grown this year.

*Compare this record with that of any other new town you have heard of during the past dull season.*

## NORTH WILKESBORO,

Is 75 miles west of Winston-Salem, at the present terminus of the Northwestern North Carolina Railroad, which when ultimately completed to Bristol, Tenn., will give the shortest route between Norfolk and Cincinnati. North Wilkesboro is the most important trading point between Winston-Salem and Bristol, and is in the center of the great undeveloped mineral and timber district of Northwestern North Carolina, being by United States Postal Map on an air line 75 miles southeast of Bristol, 45 miles east of Cranberry, N. C., 40 miles north of Statesville, 45 miles northeast of Hickory, 90 miles northeast of Asheville, 45 miles southeast of Mt. Airy, and 80 miles south of the Norfolk & Western Railroad, in the valley of the Yadkin, between the Brushy Mountains on the South and the Blue Ridge on the North. Climate, healthfulness, water, drainage and location unsurpassed by any town in North Carolina.

The townsite consists of 1,088 acres, located, by the way on a farm originally owned by General John B. Gordon's grandfather. The first public auction sale of lots was held December 2, 1891, and 188 lots were sold. Purchasers have in many cases been able to resell at a handsome profit. The company has sold 50 lots at private sale since then, on many of which houses are now being erected. It is a significant fact that among the business buildings erected a large per cent. are substantial brick structures, while for architectural beauty and cost many of the residences are much superior to those usually found in a town so young.

At the second auction sale, May 11th, 1892, 35 business lots and 44 residence lots sold for \$16,490, an average of \$8.35 per front foot, which is \$2.53 per front foot (or 44 per cent.) more than the average at the sale last December, which was the best sale made in North Carolina during last year. Since the sale, a contract has been closed for the location of another large saw mill, planing mill, sash, door and blind factory combined, which will do a large shipping business. A contract is closed for the location of extract works with a capital stock of \$300,000. The plant will cost \$125,000 and will cover six acres of land. Twelve families from the North will move down. The company will erect a large electric-light plant in connection with the extract works. North Wilkesboro will get there and will not be long doing so.

Through the townsite runs a stratum of serpentine stone, 200 feet in width, and also a bed of iron ore equal in quality to that of Cranberry. The Town Company also owns 4,100 acres of mineral, granite and timber lands in Wilkes County. It is probable that the work of developing the great mineral and timber interests of the section will be commenced in a short time, and on an extensive scale.

*Sites will be donated and stock subscribed to such manufacturing enterprises as may be advantageously located here.*

The policy of the Company is a most liberal one in this respect, it being determined to aid all legitimate enterprises to any reasonable extent. There are 328 miles of water courses within the borders of Wilkes County, furnishing to the vicinity of North Wilkesboro a water power as great as Fall River. The climate, while not moist, is neither harsh nor dry, and is especially suitable to the spinning of fine cotton yarns, such as cannot be made in the extreme South or North. There is also a fine opportunity here for bleacheries, to the establishment of which at Southern points there is a tendency at present. As they can't go where sluggish streams, impregnated with vegetable matter, abound, the quick flowing streams of clear mountain water, so numerous about North Wilkesboro, afford everything desired. Numerous other industries will do well at North Wilkesboro, and will be most substantially encouraged to locate there.

Capitalists, Home Seekers, Health Seekers, Manufacturers of wood and iron, and many other industrial workers may well investigate North Wilkesboro's advantages.

The above-described townsite and other property belongs to the Winston Land & Improvement Co., which was chartered by act of Legislature, session of 1887; ratified March 4, 1887, chapter 82. Authorized capital \$1,000,000. Present capital stock \$125,000, all subscribed and paid up.

**OFFICERS**—G. W. HINSHAW, President, of Hinshaw & Medearis, Wholesale Merchants; Vice-President People's National Bank, Winston, N. C. DR. W. L. BROWN, Vice-President, of Brown Brothers, Tobacco Manufacturers, Winston, N. C. W. F. TROGDON, Secretary and Treasurer, North Wilkesboro, N. C.

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NORTH WILKESBORO, N. C.



# As A LOCATION for Manufactures

Of Iron and Wood and for General Industrial and  
Business Enterprises,

## FRONT ROYAL, VA.

INVITES INVESTIGATION.

---

Its location, at the junction of the Norfolk & Western Railroad (Shenandoah Valley line) and the Richmond & Danville's branch, give it excellent transportation facilities. It is only a few hours' ride distant from Washington. The Norfolk & Western's direct line to Washington will be built from Front Royal.

---

*There is no Finer Agricultural Country in the World than the Famed Shenandoah Valley, in which Front Royal is Located.*

---

A WIDE RIVER WITH SWIFT CURRENT FURNISHES WATER POWER  
AND MAKES DRAINAGE PERFECT.

---

Front Royal is a Prosperous Town, with an Extensive Mercantile Business  
and Many Manufacturing Enterprises in Operation and  
Under Construction.

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INVESTIGATION OF ITS ADVANTAGES IS INVITED BY THE

Front Royal---Riverton Improvement Company,

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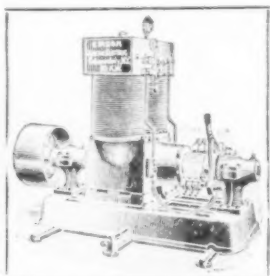




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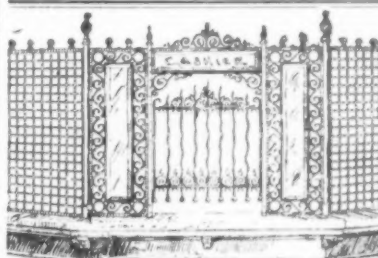
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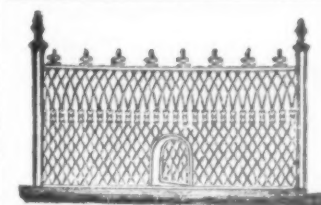
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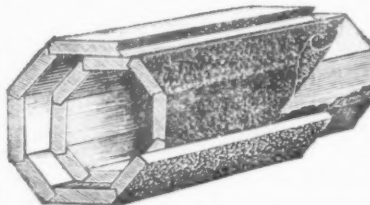
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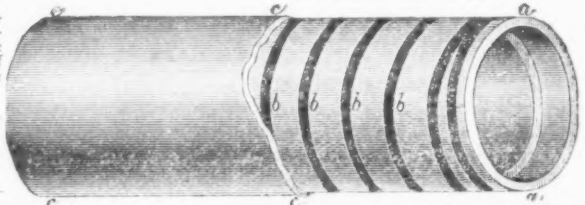
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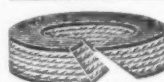
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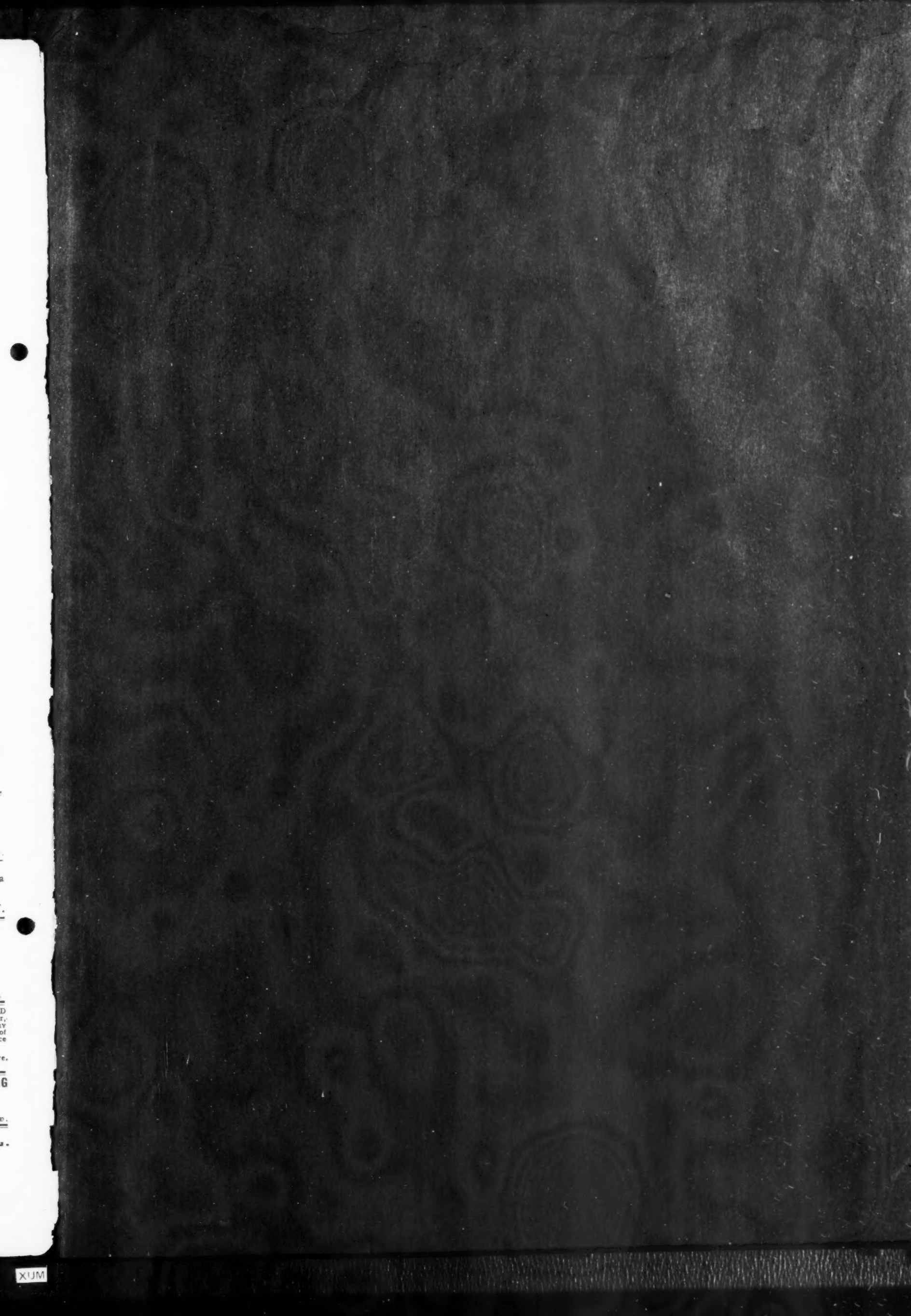
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